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THE IRON AGE

New York, Thursday, August 29, 1907.

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Rolling Seamless Tubes.

The Phenomenon of the Central Rupture in Cross Rolling.

Some 40 years ago a well-known and successful file manufacturer in Remscheid, Germany, named Mannesmann, pondered the problem of rolling seamless steel tubes. Seamless tubes had been made before by drilling a blank and rolling it into a tube over a mandrel while in a heated condition; or by casting a hollow ingot and then rolling it out. Both methods, however, were expensive and imperfect. For years the file manufacturer spent time and money on fruitless machinery until advancing age put an end to his experiments but not to his purpose. When his sons, who had now matured and were completing their education, came home during vacations, the father would point to the pile of scrap machinery and remind them that though he had failed he was sure the problem could be solved and that they must do it. In time the sons graduated, toured Europe and settled down at Remscheid to put their engineering training to prac-

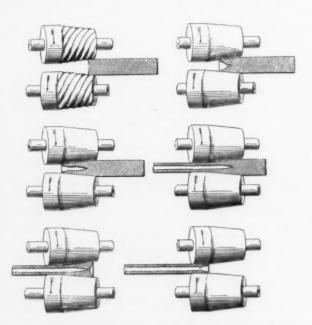


Fig. 1.—Successive Stages in the Rolling of a Tube by the Mannesmann Process.

tical use in the works, but keeping always in mind the mystery of the rolling of seamless tubes.

For many years it had been known to iron masters that moderate hammer forging of round steel billets sometimes developed a small central rupture, a defect which it was their care to avoid. Taking this as their clue, the Mannesmann brothers experimented for more than a year, and finally invented the celebrated Mannesmann process of piercing billets and rolling seamless tubes, which, by its startling novelty, as well as its effect upon the tube making art, marked an epoch in the iron industry. As the mechanical world knows, the process consists in passing a heated billet endwise between diagonally arranged or skewed conoidal rolls rotating in the same direction, with the rolls adjusted so as to make a reduction of about 40 per cent, and thus effecting a rupture along the axis of the billet, changing the solid blank into a tubular body. Fig. 1 represents the method as disclosed in the original United States patent to Max

The mental process leading to this invention appears to have been something as follows: Finding that the defect of the ruptured center did not occur in heavy press forging, or in die forging, but only when the blows of the hammer were distributed in succession around the perimeter of the metal cylinder, the hypothesis was drawn that, to produce the effect, radial compressions should be applied rapidly and successively at opposite points around the entire circumference, the exterior of the billet densified and the cylinder deformed by the pressure along different diameters in rapid succession. It was assumed that the toughening of the exterior was a necessary pre-liminary; that the radial compression was resolved into diagonally acting forces diverging from the points of application which, meeting, produced two diametrically opposite forces at right angles to the original pressure;

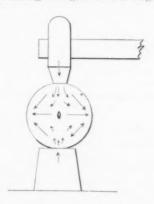


Fig. 2.—Diagram of the Cross Rupturing Strains Produced by Hammering.

that the outer denser metal thus bulged laterally, but maintained its Integrity, while the weaker central metal finally ruptured under the strains successively applied across all diameters. It was also assumed that as the hammer blows spread the metal in all directions, longitudinal extension of the denser exterior metal aided in rupturing the center. The diagram in Fig. 2 illustrates the Mannesmanns' conception of the distribution of the cross rupturing strains, and that in Fig. 3 their idea of the longitudinal rupturing strains. In Fig. 2 the arrows indicate the resolution of the radial forces. In Fig. 3 it is assumed that the central portion of the bar has been forged to smaller diameter and toughened in its

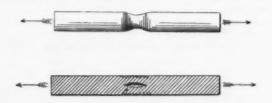


Fig. 3.—Diagram of the Rupturing Effect Produced by Longitudinal Strains.

exterior layer. Longitudinal stretching would then tend, according to their conception, to rupture the center of the forged portion because of the superior cohesiveness of the denser outside, which would strive to straighten out into line with the surface of the larger parts of the bar.

The Mannesmanns concluded that the constantly shifting opposite radial pressures could be produced by cross rolling a billet between rolls rotating in the same direction. This action slightly flattens the billet successively throughout all of its radii so that the long diameter rotates with respect to the mass, thus producing the tendency to rupture by pulling apart the center. To get the longitudinal stretching effect they made the rolls in the shape of conical frustums whose axes crossed at an acute angle, and fed the billet between them at their smaller ends. The rolls thus acted as differential screws;

the larger ends of the rolls, having a higher peripheral speed than the smaller ends, constantly stretched the metal in contact with the roll surfaces between the two ends. The conical form of the rolls also had the effect of imparting a twist to the blank, owing to the different speeds with which different parts were engaged. This

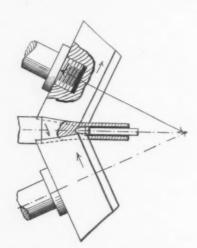


Fig. 4.—The Arrangement of the Skewed Rolls as Used in Present Practice.

twist was deemed an advantage, as it was thought to render the wall of the central opening more smooth and to strengthen the resulting tube.

Although the hypotheses of the Mannesmanns led to practical results, later observations indicate that they were not wholly correct. It is probable that the formation of a dense exterior as a condition precedent to the rupture of the center is not a necessity, but a mere incident of the process, also that longitudinal stretching and twist are not essential, but rather a defect in carrying out the process. Present practice discards the conical rolls having their smaller ends in contact with the larger portion of the billet, and adopts rolls having contact with the metal on the bevel gear principle, as in Fig. 4, the billet entering the rolls at their larger ends, and all zones of the billet having the same surface speed as the zones of the rolls that are in contact with them. The skew of the rolls is still deemed important for feeding the blank forward and making the action continu-The illustration of the tube made by this process in the original United States patent to Mannesmann is not in exact accord with later observation, as tubes thus rolled are not open all the way through, but are closed

Apparently it was not formerly known that rolling a round body about its axis under pressure ruptured the center of the blank to a greater or less extent. Prior to

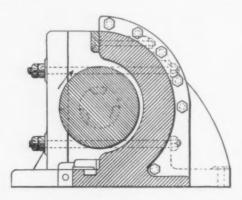


Fig. 5.—A Scheme for Cheaply Rolling Car Axles that Failed Because It Ruptured Their Centers.

the publication of the Mannesmann process steel balls for bearings were made in large quantities by cross rolling slugs from round bar between platen dies reciprocated in opposite directions, just as one might roll a ball of putty between the palms. Small steel balls thus made

were afterward ground to accuracy, and for many years were used for light bearings, such as those of bicycles, giving entire satisfaction. When, however, ball bearings came to be used for heavy machinery, these rolled balls frequently crushed. Investigation showed that the broken balls had a small central cavity or flaw and were sometimes full of small radiating cracks, like a bad radish. In a word, the phenomenon of the ruptured center had occurred.

Even 10 years after the advent of the Mannesmann process this phenomenon was not comprehended by all iron men, for a certain manufacturer conceived the idea of rolling steel billets into the form of car axles between a roll and a fixed concave surface eccentric thereto, as illustrated in Fig. 5. The billet was heated and fed sidewise into the space between the roll and the concave and rolled over and over, passing out at the bottom finished. This was far more rapid and cheap than the old way of making wrought axles and the manufacturer had visions of large profits. Such confidence had he in the quality of axles thus made that he secured a contract for a considerable number from one of the leading railroads, on condition that they should stand the test of axles then in In due time they were delivered and they looked all right, but when weighed it was found they were not as heavy as a solid mass of steel of those dimensions should be. Several of them were then sawed crosswise and found to be hollow in the center. The entire lot was

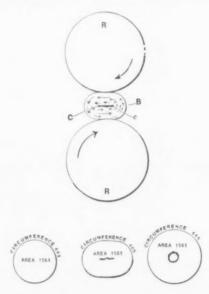


Fig. 6.—Diagram of Straight Cross Rolling and the Effect.

therefore thrown back upon the contractor and his financial ruin followed. He had been making tubes and did not know it.

The true philosophy of this phenomenon is probably that apprehended by Mannesmann with respect to the rupturing strains set up by radial pressures successively applied to deform a round metal blank by bulging it laterally. The effect is very much accentuated, however, in the cross rolling process, by the flowage in opposite directions of the opposite halves of the metal of the deformed billet, and by the fact that a circle of given circumference encloses a larger area than an oval or other figure having the same circumferential extent.

In Fig. 6, R R represent a pair of rolls and B a billet being rolled between them under pressure. Assuming the circumference of the original billet to be 443, it enclosed an area of 1561. If the rolls were adjusted to compress the billet and deform it from a circular section to an oval section having a circumference of, say, 485, the area would still remain 1561. In the rolling action the metal must circulate around the two axes, C c, of the oval, and two streams flow in opposite directions, passing each other between the axes C c. A central rupture is thereby effected, governed in its extent by the amount of flattening of the billet, which is always limited by the ability of the rolls to revolve it. Now, if the rolls be moved apart gradually while still rotating, until the section of

the billet again becomes round, the central crack will be opened into a rough sided cylindrical cavity, and the circumference of the exterior, if there has been no endwise elongation, will be the same as that of the compressed oval billet, but greater than that of the round one. Since a circle whose circumference is the same as that of an oval includes a greater area, and as the mass of the oval billet and the round billet remain the same, the increase of area will be the area of the hole.

Inspection of Fig. 7 will suggest why the ends of a cross rolled body are closed. The pressure of the rolls

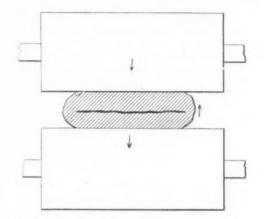


Fig. 7.—Sketch Indicating the Reason for the Closed Ends of a Cross-Rolled Body.

upon the mass of metal always spreads it in the direction of least resistance, which is, for the most part, at right angles to the plane of the roll axes. There is always, however, a slight endwise bulging of the ends of the billet. These bulging ends, since they do not come into contact with the rolls, rotate around a central axis instead of around two axes. At these points, therefore, rupturing of the center does not take place.

It follows from the above considerations that the most effective means for rupturing the center of a billet by cross rolling is a pair of opposed rolling surfaces the entrance of the pass between which gradually narrows

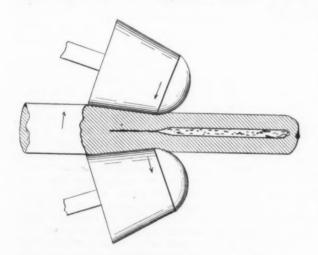


Fig. 8.—Skewed Rolls in Which the Zones of Contact Have the Same Peripheral Speed.

while the exit gradually widens, and so arranged with respect to the billet that the zones of contact between the roll surfaces and billet shall have the same peripheral speeds, as in the roll and concave illustrated in Fig. 5, or the skewed rolls of Fig. 8. The skewed rolls are adapted to be used with a smoothing mandrel, as shown in Fig. 4, the use of which is customary and necessary if a smooth walled cavity is to be had.

Mention is made in the British engineering press of the proposed steel works in Japan in which Japanese and British capital will be interested. Vice Admiral Yamanouchi has been in Great Britain recently in furtherance of the enterprise which is being promoted by the Hokkaido Colliery & Steamship Company, and not by the Japanese Navy as had been reported. The Admiral is permitted by the Japanese Government to act as adviser to the new company. It is proposed to raise 10,000,000 yen, about \$5,000,000, and the steel works will be erected at or near Muroran. The steel plant in the Kuri naval arsenal and the other Japanese government steel works at Wakamatsu are inadequate to the demand for steel now coming up in Japan. The government did not feel like undertaking an additional plant, but is favorable to the carrying out of the project by an Anglo-Japanese stock company. It is said that ultimately considerably more than \$5,000,000 will be spent.

The Cleveland Furnace Company.

Some facts have recently been presented concerning the business of the Cleveland Furnace Company, Cleveland, Ohio, in connection with the offer of \$900,000 of first mortgage 6 per cent, gold bonds dated July 1, 1907, and maturing in yearly installments between January 1, 1909, and January 1, 1922. The bonds are secured by a closed first mortgage on the company's 35 acres of dock property, with 1500 ft, frontage on the Cuyahoga River; two blast furnaces, one of which is under construction, and the two having a capacity of 240,000 tons of pig iron a year; the accompanying equipment, power houses, ore and coke handling machinery, &c. The resources of the company are given as follows:

Real estate and Furnace A\$,213,280.38
Furnace B, estimated cost	700,000.00
Cash, accounts, bills receivable and inventory	755,665.78
Investments in additional real estate and in iron	
ore and transportation companies	159,732.44
Sundry other assets	13,775.37
Wedel 96	949 459 97

Against the above the liabilities are current accounts not yet due amounting to \$109,510.02 and the \$900,000 bond issue. The net earnings for the year ending March 31, 1905, were \$122,514.72, for the following year \$255,-269.80, and for the year ending March 31, 1907, \$452,-261,53. The company's capital stock is \$1,000,000. In the three years ending March 31, 1907, it has paid in dividends \$140,000 and accumulated a surplus of \$636,-000, besides its reserve for renewals and relining and for maintaining the property. At present 70 per cent. of the company's output, which is confined to foundry and malleable pig iron, is distributed in the city of Cleveland. The local demand for basic pig iron, which the company has been unable to supply, has necessitated the erection of the furnace now under way, which will be devoted chiefly to the manufacture of basic iron. Concerning raw material supplies it is stated that the company owns substantial interests in five iron ore companies and the controlling interest in a limestone and transportation company on Kelley's Island in Lake Erie, and has a favorable contract with the Retort Coke Oven Company, Cleveland, whose plant is on the land of the Cleveland Furnace Company in close proximity to the furnaces.

It is said that the first suggestion of the Cape Cod Canal, on which digging began August 20 at Sagamore, Mass., was made in 1697. In that year the general court of Massachusetts ordered an inspection of the proposed location. Various surveys have been made in the intervening two centuries. William Barclay Parsons, New York, turned the first shovelful of earth.

The contract for the steel work on the new plant of the Wall Paper Manufacturers, Ltd. Greenbithe, Eng., calling for 2,000 tons, has been taken over by Redpath, Brown & Co., Ltd., of London and Edinburgh. Originally it was placed with Milliken Brothers, Inc. New York, and the transfer was due to the receivership of the latter company.

The Empire Bridge Company's Extensions.

Improvements Now Under Way on the Plant at Elmira, N. Y.

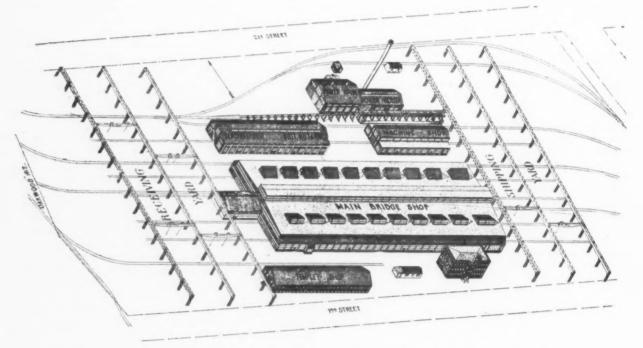
Rapid progress is being made on the extensive improvements to the Empire Bridge Company's plant at Elmira, N. Y., which were started early this year, and before the close of 1907 it is expected that the enlarged plant will be in full operation. Work on the buildings is now being pushed, and as fast as it allows, the new machinery, most of which has been delivered, is being installed.

The site at Elmira Heights is between Nineteenth and Twenty-first streets, contiguous to the Erie, the Delaware, Lackawanna & Western, and the Pennsylvania railroads, and has an area of about 15 acres. Originally the plant was known as the North shop of the Elmira Bridge Company, Ltd., by whom it was built in 1895 and operated up to 1900 in connection with an older plant of the same kind in Elmira proper known as the South

chines necessary for turning out the main members of bridges and buildings of the heaviest type. The handling facilities will include 10 and 20 ton overhead cranes for general service and special jib cranes for handling individual pieces in the vicinity of all small machines. At the west end of the main shop an extension 55 x 80 ft. will provide space in which to take care of detail material.

The receiving yard, at one end of the main bridge shop, for the storage and handling of raw material, and the shipping yard, at the other end of the same building, for loading and shipping of the finished product, are each served by two electric traveling cranes on separate runways, 600 ft. long. The combined storage area at these two yards is about 225,000 sq. ft., all of which is covered by skids to protect the material from rust by contact with the ground.

The machine shop building is 60 x 240 ft. In the main aisle, which is 30 ft. wide, and is commanded by a 15-ton crane running the length of the shop, will be installed planers, slotters, boring mills, heavy lathes and other machines for the execution of heavy work, while machine tools for lighter work will occupy the 15-ft. wings on



Isometric Perspective of the Enlarged Plant of the Empire Bridge Company at Elmira, N. Y.

shop. The property passed into the hands of the American Bridge Company on its organization in 1900 and was subsequently acquired by the Empire Bridge Company, which for several years has contemplated the improvements now being made.

Until recently all operations were conducted in a single building, 90 ft. wide by 400 ft. long. The enlarged plant, an isometric perspective of which is shown herewith, includes an extension to the original building, now designated as the Main Bridge shop, making it 215 x 528 ft. in size; a boiler and power house, machine shop, templet shop, and a forge shop. All buildings are of steel construction, column bearing, with brick curtain walls, concrete foundations and slate or slag roofs.

At present about 250 men are employed and the output is about 15,000 lb. of steel bridge and building material per annum. When the extended works are in full operation the working force will be more than doubled, and, with the installation of new machinery, which is all of the most modern type, together with additional handling facilities for heavy material, the output will be quadrupled, thus making it one of the largest and best equipped producers of structural work in the East and placing it in the forefront of the structural shops of the world.

In the main bridge shop there will be punches, chord boring machines, drill presses, shears, rotary planers, plate shears, reamers, hydraulic riveters, and other maeither side, the entire areas of which are covered by traveling jib cranes of special design.

The forge shop, 60 x 240 ft., will be devoted in part to the manufacture of bolts, nuts and rivets, and the remainder of the building to bending, forging, tempering and the making of loop rods and light eyebars.

The templet shop, 50 x 224 ft., will be fitted with saws, planers, boring machines and other woodworking machinery needed for templet and pattern making, and the basement of the same building will be used as a storeroom for plant supplies and miscellaneous material.

For switching purposes about 2 miles of standard gauge railroad track is being laid and a 40-ton private switching locomotive has been purchased. Two 100-ton track scales, one at the receiving end of the shop and the other at the finishing end, will weigh raw material as received on cars and finished product shipped out. There is also being built about 2 miles of narrow gauge track for intercommunication throughout the plant, over which hand pushed buggies will be operated.

Direct current at 220 volts will supply power and light; each machine will have its individual motor, and for general lighting inclosed incandescent are lamps of the long-flame type will be used, with incandescent lamps for auxiliary and individual lighting. The artificial illumination will permit night work with equal facility to that by day.

The boiler house is 42 x 90 ft. and contains four 250-

hp. water tube boilers, equipped with mechanical stokers, damper regulators and feed water regulators, and fed by two compound duplex pumps; one is capable of supplying all boilers so that the other may be held as a reserve. The engine room, a part of the same building, is 60 x 80 ft. in size and contains two horizontal tandem compound condensing engines driving 300-kw. generators; one vertical cross compound condensing engine driving a 100-kw. generator; two air compressors of a total capacity of 3600 cu. ft. per minute, besides other minor equipment. The power house is served by a 20-ton electric crane.

Boiler feed water and the general water supply will be taken from a system of wells, which have already been sunk, and for the former purpose the water will be treated in a purifying system. A complete drainage and sewerage system has also been provided, together with modern and thoroughly sanitary toilet equipment. Fire protection is afforded by a complete independent system of piping supplied by a pump of high capacity, capable of maintaining six 1½-inch streams at a pressure of 125 lb. For instant use the pump, which is automatic in its action, will be kept under steam at all times, and a fire brigade will be organized among the workmen in the shop and frequently drilled. To care for injured employees a well equipped emergency hospital in charge of a competent nurse will be maintained on the premises.

Cuban and American Trade.

Conditions Seem to Foreshadow Annexation.

Washington, D. C., August 27, 1907.—The reports from Cuba of Civil Governor Magoon, regarding the bad sanitary conditions and showing that the Cuban authorities have failed to carry out the provisions of the so-called Platt amendment, will probably result in the continuance of American control in the island for an indefinite period. In the opinion of prominent public men, they actually foreshadow the ultimate annexation of the little republic to the United States, presumably on a basis of mutual free trade. It is probable that the Cubans will be afforded another opportunity to demonstrate their capacity for self government, but Administration officials most familiar with conditions in the island take a decidedly pessimistic view of the outlook.

The New Treaty Delayed.

It had been the intention of the Administration to surrender the island to the Cuban authorities some time during the coming winter, and at the same time to send to Congress a new reciprocity treaty with Cuba to take the place of the existing convention, which will expire in December, 1908. The negotiation of this treaty was undertaken a year ago, chiefly at the instance of certain American manufacturers and exporters who claimed that the reductions in the Cuban tariff on American goods in the existing treaty were insufficient to enable them to increase their proportion of the island's trade. It was admitted that there had been an important increase in the total shipments to Cuba, but it was pointed out that this was also true of the exports to the island from England, Germany, Spain and other foreign countries, and it was contended that the Cubans were spending in other countries the bulk of the money, amounting to nearly \$100,000,000, secured from the sale of their sugar, tobacco, iron ore, &c., in the United States,

The negotiation of the new treaty, which included heavier cuts in the Cuban tariff on American products, was interrupted by the revolt against the Palma government and has not been resumed during American occupation. It is the best opinion here that nothing further will be done with the treaty until the approximate date of the evacuation of the island by the United States forces can be determined. State Department officials, however, are being subjected to considerable pressure to hasten the conclusion of the new treaty on the ground that the existing reciprocal trade arrangement affords enormous advantages to Cuban producers of sugar, to bacco, &c., without corresponding benefits to the trade of the United States. From present indications the ne-

gotiation of the treaty will not be resumed for several months, as both Secretary Root and the President are opposed to modifying the existing arrangement until the Cuban government is in position to acquiesce formally in the changes. Under present conditions, it would fall to Civil Governor Magoon to sign the treaty on behalf of the Cubans, a fact that would, no doubt, call forth a protest from the governments of other nations, which view the concessions heretofore made to the United States with a jealous eye and have sought in vain to secure similar advantages.

Commerce with Cuba.

With a view to relieving the pressure on the Administration for the negotiation of a new treaty, the Bureau of Statistics of the Department of Commerce and Labor has prepared a statement designed to show that the present arrangement has resulted in a larger proportionate increase in our exports to Cuba than in Cuba's shipments to the United States. A comparative summary is presented of the commerce of the United States with Cuba during the fiscal year ending June 30, 1907, and the fiscal year 1903, the last year prior to the taking effect of the present treaty. From these figures it appears that while Cuban exports to the United States have increased during the four years about 50 per cent., the shipments from the United States to Cuba have gained 125 per cent.

Expressed in percentages this is, of course, an excellent showing from the American standpoint, but a statement of actual values is not so flattering to the manufacturers and exporters of the United States. The total value of American exports to Cuba in 1903 was \$20,140,-132, but as a treaty involving tariff reductions was then in immediate prospect the export movement was at an abnormally low-ebb. In 1907 the shipments to Cuba were valued at \$48,330,913, or a gain in four years of about \$28,000,000. The exports from Cuba to the United States in 1903 were valued at \$62,942,790, while in 1907 they rose to \$97,441,690, a gain of nearly \$35,000,000. It thus appears that the actual gain in values has been 20 per cent, greater in our imports from Cuba than in our exports to the island, and that at present we purchase nearly twice as much in Cuba as the Cubans buy in the United States. This disparity would appear to be much greater if expressed in quantities rather than values, as our imports of sugar have recently been unprecedentedly large, while the price of this commodity has ruled very

Exports of Metal Manufactures.

It is also very significant that the largest increases recorded in our shipments to Cuba have been of commodities paying very low ad valorem duties. The shipments of flour have increased in four years from \$1,941,-690 to \$3,121,846; of lard, from \$1,812,639 to \$2,948,487; of lumber, from \$819,222 to \$2,330,867; of boots and shoes, from \$536,303 to \$2,145,415, and of bituminous coal from \$1,047,733 to \$2,013,913. In the metal schedule the exports of locomotives have risen from \$67,970 to \$765,770, this great gain being due to the construction and equipment of new railroads; cars, carriages, &c., have increased from \$595,896 to \$1,156,473; builders' hardware has risen from \$314,205 to \$573,507; scientific instruments, &c., from \$151,248 to \$620,467; sewing machines from \$131,110 to \$330,463 and agricultural implements from \$55,766 to \$95,334. These figures show a gratifying growth in our exports to Cuba, but, inasmuch as nearly all our important foreign competitors have made corresponding gains, it is apparent that the existing treaty has merely increased Cuba's purchasing power and that only about one-half the money we send to the island is expended by the Cubans in our markets.

A meeting of blast furnace superintendents of the Carnegie Steel Company in the Pittsburgh, Bellaire, Mingo Junction and Youngstown districts was held last week in the offices at the Ohio Works, Youngstown, Ohio. The party was shown the blast furnaces of this plant by J. C. Barrett, superintendent of furnaces. It is the custom of these furnace superintendents to hold monthly meetings at the different places where blast furnaces are located to discuss business matters of general interest.

The Armor Clad Pipe Corrugating Machine.

A machine which is claimed to be entirely different from anything of the kind yet invented is one recently patented by Andrew McKenzie, Canton, Ohio, and manufactured by the Armor Clad Mfg. Company of the same city. It is intended for forming corrugated conductor pipes, round or square, in all standard sizes, from 2 to 6 in., and plain pipe may also be made by removing the corrugated brackets. The machine, the general appearance of which is shown in Fig. 1, is said to have two or three times the capacity of any other machine intended for the same purpose, and also to be so simple that a skilled mechanic is not required to operate it.

For each size of pipe there are furnished with the

Operations are started by laying the curved sheet with edges ready to be locked on the forklike brackets, shown at the right in Fig. 1. Then by depressing the footbar the pipe is compressed between the two horizontal flat bars, shown in Fig. 1, which causes the upper edges to curve toward one another, so that they may be locked. The upper horizontal bar at the right of the machine in Fig. 1, on which the pipe rests while it is passed into the machine, has a flange against which the lock of the pipe is pressed to guide the pipe as it is fed into the machine. With this preparation the pipe is introduced between the first pair of rolls, which act as feeding rolls and also lock the seam. A cross section of this part of the machine is shown in Fig. 2, where the upper roll is the feeding roll and the lower roll a gripping roll to help pass the pipe forward. All of the rolls are geared together and driven in the manner plainly indicated in

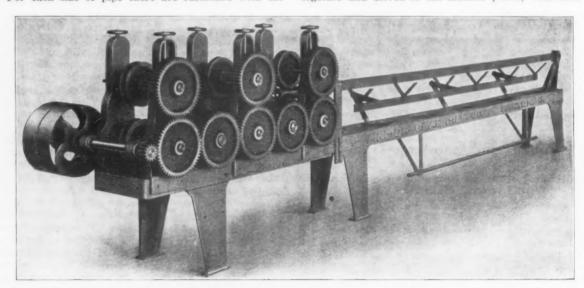
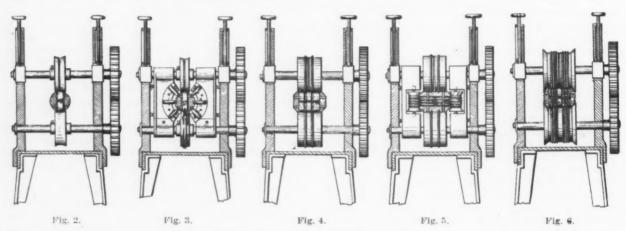


Fig. 1.-A Macnine for Corrugating Sheet Metal Pipe, Built by the Armor Clad Mfg. Company, Canton; Ohio.



Cross Sections of the Roll Shafts Variously Equipped.

machine an arbor, seven rolls and one set of corrugating brackets, and all sizes fit on the same shaft, so that they can be located in proper position very easily. Finally, with a small adjustment of the hand wheel, according to the thickness of the pipe or the deepness of indentation required, the machine is ready for operating. It is substantially built; all of the gears are machine cut and are keyed to cold rolled shafts. Each shaft is provided with a fixed collar to bring the rolls in proper position, and a loose collar with set screws to bear against the rolls to keep them in position. While the illustration, Fig. 1, shows the machine equipped with a tight and loose driving pulley, it is now furnished with a friction clutch pulley, 14 in. in diameter by 5 in. face. This rulley runs at a speed of 360 rev. per min., or can be speeded to as high as 450 rev. per min., the only precaution necessary being to pay closer attention to lubrication. The machine by tests has been found capable of performing its work at the rate of seven lengths per minute, a new length being introduced while one is passing through the roll,

Fig. 1. Fig. 2 also shows a cross section of the mandrel and the two anti-friction rolls, which are imbedded in it to decrease the friction between the mandrel and the feeding rolls. From this set of rolls the pipe passes to the middle set, shown in Fig. 1 and in cross section in Fig. 3. The upper and lower shafts in this case carry rolls which act as corrugating rolls as well as feeding rolls, and here again there are anti-friction rolls in the mandrel. It will be seen, however, that the cross section of the mandrel has changed and it is now of a shape to correspond to the pipe to be made. The corrugations on the side are formed in the manner indicated, by idle running rolls which press the pire into the identations in the mandrel. A third set of rolls, not illustrated, act simply as delivery rolls to pass the pipe out of the machine at the left hand side, as seen in Fig. 1.

When square pipe is to be made another set of rolls is substituted of the forms shown in Figs. 4, 5 and 6, these being the cross sections, respectively, through the three pairs of roll shafts from right to left in Fig. 1.

As shown in Fig. 4, the upper roll acts not only as a seaming roll, but as a corrugating roll, and at this stage of the process the pipe receives corrugations merely on the top and bottom. In this case also there are antifriction rolls imbedded in the mandrel. Passing to the second set of rolls, those shown in cross section in Fig. 5, the pipe receives corrugations on the sides by means of the idle rollers and the anti-friction rollers here imbedded in the sides of the mandrel. In place of a simple set of delivery rolls at the discharging end of the machine there is substituted another set of corrugating rolls, shown in Fig. 6, and the mandrel is extended a corresponding amount and contains the anti-friction rolls shown. This last set of rolls puts the final corrugations on the top and bottom sides of the pipe.

Ore Shipments Are Large.

DULUTH, Minn., August 24, 1907.—Ore shipments are large. The Duluth, Missabe & Northern Railroad is moving ore at the rate of 2,000,000 tons this month and expects to do even better in September if shipping is not delayed. Other roads are not making as high a record, though the Great Northern is doing well, comparatively. As might have been expected, this road was less hurt by the strike than either of the others. Its chief shippers are independent mines, such as Mahoning, Stevenson and Kinney, as well as a host of smaller properties operated by furnace interests.

The Oliver Iron Mining Company was the shining mark for the strike leaders, who several times asserted their intention of letting independent mines alone and did so to a considerable degree. Therefore, of course, the Great Northern lost less than any other interest. Its shipments are now at the rate of 1,000,000 tons a month. The Duluth & Iron Range Railroad, moving all Vermillion range ore, was unimpeded except during the dock strike, but as a considerable share of its Mesaba product is from shafts of the Oliver Iron Mining Company, it has been cut into rather badly and is moving ore at about 1,300,000 tons this month. These three roads were scheduled at the beginning of the year to move ore as follows: Missabe line, 11,000,000 tons, Iron Range, 9,000,000 tons, and Great Northern, 7,000,000 tons. It is now the last week in August and practically half the season has passed, for navigation was a little late in opening. The three have shipped to date, as follows: Missabe, 6,800,000 tons; Iron Range, 4,400,000 tons and Great Northern, 4,100,000 tons. All are well up with their schedules, it will be noted, and as these schedules have been modified in some cases and to some degree, the margin of safety is excellent, in spite of the two rather drastic difficulties of the summer. This fact will be somewhat of a surprise to most of those interested in the trade in the East.

The Great Northern Ore Lands.

The Oliver Iron Mining Company has done nothing on the Great Northern lands, the lease of which was announced many months ago, either in mining or in preparation for mining. The one Great Northern property that was open and in shape for some shipment this year has been idle all season, and there are even yet no signs of activity therein. As a matter of fact, it is quite doubtful if the Oliver Company could have gone to work on those lands more extensively than in the drilling it has been carrying on, as the final contract has not been signed. Indeed, unless this is done between the date of this letter and its publication, it is probable that the Oliver Company has no title even yet to these lands, and that active work cannot begin for some time. A considerable amount of drilling has been done on various portions of the lands since the deal for lease was first considered and announced by the Great Northern and these have, in general, borne out the conditions supposed to exist.

The Labor Situation.

While the Mesaba range strike is in the identical condition of a week age, interest is fading somewhat, except with the companies forced to import men, the deputies on guard at mines and the strikers themselves. The leaders of the Western Federation of Labor here

have been able so far to deport a good many of the laborers imported by the Oliver Iron Mining Company. Probably half of those who have come in have quickly gone again, their going paid for out of the Federation treasury. This expense and the drain of strike benefits have been severe, and the Federation is now regretting exceedingly that it attempted to secure a foothold here.

Labor agitators representing the Federation have been on all Lake Superior ranges recently in an attempt to organize the miners. The reception they have met has been rather remarkable. One agitator went into Hurley, Gogebie range, and as soon as his presence was known the business men of the town invited him to depart across the State line to Ironwood, accompanying the invitation by such representations as made it seem wise to accept instantly. At Ironwood, no sooner were his placards of meetings distributed on the streets than the business men there met him and invited him to leave town and the Gogebic Range, which he did.

A subsequent visit to the Menominee range, at Crystal Falls, met with the same reception. A committee of about 20 met him, requested him not to deliver the address he had advertised and turned out the lights of the hall he had hired. About 100 persons were gathered there, most of them out of curiosity, and among them were scarcely any miners. A mass meeting of citizens was called, and passed resolutions to the effect that labor conditions were at present sufficiently good; that the miners were receiving wages that had once been raised this year; that they had not asked any further advance; that they were satisfied with their present wages, and were a happy and contented people, and that the representative of the Western Federation be requested to leave the city on the first train and not to return, as his "presence is detrimental to the business men and laborers of this district," and that the people of the region "will not tolerate anarchy or allow agitators to stir up strife among our people." The people of one other town informed the walking delegate sent there that they had had one experience of strikes and the soup kitchens subsequent thereon, and didn't want any more of it, and that if he did not leave and stay away they would be forced to put him out forcibly.

At Ishpeming and other points of the Marquette range the same wall of opposition was met, and at no point on Lake Superior has the Federation yet been able to extend the organization effected during the past two years on the Mesaba. Were business men of this latter range now to have the thing to do over again they would doubtless take the same or more strenuous steps against any organizers of the Federation.

In so far as the strike has brought mining companies and business men of the various ranges together it has been remarkably effective, and has shown the latter, as never before, the community of interest between themselves and others of their districts.

During the present month lake iron ore tonnage to the amount of 67,000 gross tons capacity per trip is being put into commission, this including one 12,000-ton vessel, one 11,000-ton, three of 10,000 tons and two of 7000 tons. Indicating the increasing tendency of ore shippers to operate their own ships, one of these ships is for the Shenango Furnace Company, one for Pickands, Mather & Co. and two are for the Lackawanna Steel Company.

n P W

The Riter-Conley Mfg. Company, Pittsburgh, is making rapid progress on the building of the four blast furnaces at the new plant of the Jones & Laughlin Steel Company, at Aliquippa, Pa. It is the intention to finish two of these furnaces as soon as possible, and when these are ready and in blast the work on the other two will be started. The stacks will each be 22 x 85 ft. and the four hot blast stoves for each stack will be 22 x 100 ft. The Riter-Conley Mfg. Company is also building the blast furnaces at the new plant of the Indiana Steel Company at Gary, Ind.

Steel rail exports from Germany in the first half of 1907 were 199,203 tons, as compared with 153,731 tons in the first half of 1906.

Lubricant Specifications.

The Navy Adopts Standards for Warships and Machinery.

Washington, D. C., August 27, 1907.—Builders and users of engines and machinery of all kinds will be interested in a spirited controversy that has recently been precipitated as the result of the decision of the Bureau of Steam Engineering of the Navy Department to use only certain brands of lubricating oils on board warships of all classes. The charge is made by manufacturers and dealers handling oils made from the products of socalled independent refiners that the bureau has specified only those lubricants made from the products of the Standard Oil Company, The bureau officials, on the other hand, assert that with the exception of one brand they have no information as to whether the petroleum products used in the specified oils are made by the Standard or not, but that after costly experiments with so-called independent oils in which much valuable machinery has been injured, the bureau has been forced to call for certain brands which have proved highly efficient and specially adapted to the needs of the navy. The oils now purchased are roughly divided into four general classes, known as engine lubricating oil, cylinder oil, high speed engine oil and ice machine oil.

The Bureau Will Not Test Oils.

The manufacturers and dealers offering independent oils insist that the Bureau of Steam Engineering should test their products under service conditions, to enable them to prove their superiority and in some cases have offered 1000 gal. or more, gratuitously, for this purpose. The bureau officials have declined these offers on the ground that the contractors are not in position to indemnify the Government for the injury to the costly machinery of the warships that would be suffered should the oils prove as inferior as many brands heretofore tested by the bureau. It has been suggested to the contractors that the principal shipbuilders are probably willing to test new brands of oil, and that if such tests prove satisfactory as to any particular brand the bureau will give the oil a trial. In this connection it is stated, however, that the brands which the Bureau of Steam Engineering now specifies are the only ones employed by the leading shipyards having contracts for the construction of warships, with the exception of the Cramp yard, where lard oil is exclusively used. The price of lard oil, which is twice that of other equally efficient lubricants, is regarded by the Bureau of Steam Engineering as prohibitory and none has been purchased for use on warships for many years.

The experts of the bureau point to the fact that the conditions on board war vessels of all classes are far more exacting than in any other service. The engines of a big battleship, for example, require more efficient lubrication than an express locomotive, and from year to year warships of all classes are being equipped with increasing quantities of complicated and delicate machinery. To employ any but thoroughly tested brands of oil, of which large quantities can be procured on short notice, for use on these warships, in the opinion of the experts, would be a very dangerous policy.

Specifications for Machinery Oils.

The question of specification for lubricants for use in the navy has received a great deal of attention during the past three or four years. For use in machine shops, power plants, ice making machinery, &c., the Department recently adopted a series of specifications which, while they are understood to be somewhat less exacting than the requirements for oils for use on warships, are believed to be adequate for any but the most exceptional service. They are now under consideration by various railroad systems and other power users and are likely to be incorporated in many lubricating contracts. The characteristics of the oil designed for general use on machinery are set forth as follows:

Must be a properly compounded oil to form a homogeneous compound that will not separate under varying temperatures,

and must consist of a pure mineral oil, and not more than 30 per cent. nor less than 20 per cent. of suitable nondrying fixed oils, as may be best suited for lubrication.

The compounded oil must be free from rosin, tar, drying oils, sulphur, asphaltic or tarry bodies, soaps or oil thickeners, water, grif, dirt or other suspended matter; and must be free from mineral acid, and must not contain more than 2 per cent. of free oleic acid. The specific gravity to be between 0.915 and 0.927 at 60 degrees F.

As a lubricant the oil when tested on an oil-testing machine, owned and operated by the Government, having a brass bearing of about 9 sq. in. projected area on a polished steel mandrel making about 160 rev. per min., with a surface speed of about 250 ft. per minute, must, to be satisfactory, perform as follows :

The temperature of the bearing must at no time during the test be permitted to exceed 130 degrees F. Only sufficient oil under test to be applied to prevent excessive friction and heating of bearing.

b. The average load on the bearing for two hours must be

at least 300 lb. per square inch of projected area of bearing.
c. The quotient found by dividing the product of the average total pressure on journal and surface speed of journal in feet per minute by the weight of oil in grains used for lubrication in the test must not fall below 325,000.

d. The duration of the test must not be less than two hours

nor more than two and one-half hours, and but one test will be permitted for any one lot of oil.

To be purchased and inspected by weight, the number of pounds per gallon to be determined by the specific gravity of the oil at 60 degrees F., multiplied by 8.33 lb., the weight of a gallon (23 cu. in.) of distilled water at the same temperature. Flashing point must not be below 400 degrees F.

Freedom from gumming. Using a half pint brass oil cup maintained at about 140 degrees F., practically equal quantities of oil must feed through the wick in equal intervals of time for three intervals of eight hours each; the wick to be of zephyr wool, four strands, doubled once. The oil in the cup will be brought to the original level at the beginning of each hour, and not less than 14 oz. avoirdupois must feed through the wick during the first period of eight hours. At the end of the test the wick must be clean and the sides of the oil cup bright and

Cold test.—The oil must flow at a temperature of 32 de-

Freedom from acid .- A small quantity when applied to a polished copper plate must not turn the surface of the metal green if allowed to stand exposed to the air for 24 hours.

Viscosity by Engler viscosimeter.—At 90 degrees F. must not be below 685; at 150 degrees F. must not be below 155; at 225 degrees F. must not be below 75, compared with distilled water (49) at 90 degrees F.

Oil for Ice Machines.

Special requirements have been adopted for lubricating oil for ice machines, as follows:

1. Must be a pure mineral hydrocarbon oil, free from acidity, adulterations and impurities, and from saponifiable substances of any character whatsoever.

2. Specific gravity.—Must be between 0.8974 and 0.8917 at a temperature of 60 degrees F.; to be purchased and inspected by weight, the number of pounds per gallon to be determined by the specific gravity of the oil at 60 degrees F., multiplied by the weight of a gallon (231 cu. in.) of distilled water at the same temperature.

3. Flash point (open cup) .- Must be above 350 degrees F

4. Freedom from gumming.—Using a single wick 'Arpint brass oil cup, maintained at 140 degrees F., practically equal quantities of oil must feed through the wick in equal intervals of time for three intervals of eight hours each. At the end of the test the wick must be clean and the sides of the oil cup bright and clean.

5. Cold test.—The oil must remain liquid at a temperature of 7 degrees F., and flow below 0 degrees F

Tin Oil Can Specifications.

The Navy Department buys considerable oil in barrels, but under general service conditions it has found fivegallon tin cans to be the most satisfactory containers. For these cans carefully drawn specifications have been prepared which will be of interest not only to consumers of oil, but also to manufacturers of tin plate. These specifications are as follows:

Cans to be new, with rounding corners; to average not le than 3 lb. each in weight; the top, bottom and body of IX 135-lb. bright tin plate; side seams to be locked and grooved; top and bottom of body to be flanged and the ends double seamed to the body; all seams to be heavily soldered on the outside with half and half solder and sufficient heat applied to cause the solder to soak through the seam to the inside; the tin plate used throughout to be made of the best quality soft steel as a basis; tin when finished to weigh not less than 2 lb. per box of 112 sheets 14 x 20 in. more than the black plate; 2½ per cent. margin, more or less, allowed; the tin to be of the best quality of Straits, Malacca or Australian.

The coating to be thoroughly amalgamated with the black

plate. This coating must be applied so that the sheets be evenly and equally coated on both sides and the coating distributed

equally over each sheet. Every sheet so coated must be free from all defects, blisters, bad edges and corners, and bare or im-

perfectly coated spots.

Cans to stand a test of applying 5 lb. air pressure when immersed in hot water without leaking, and tin in cans to stand bending test when clamped closely together in two clamps of one bend of 90 degrees and five bends of 180 degrees made from side to side before breaking. The capacity of the cans to be not less than 5 3-16 gal. The cans to be well made, with a top handle made of tin, and to have on top near one corner a 1½-in. screw cap provided with paraffin disk packing; cans to be packed so as to prevent leakage when screwed tight.

as to prevent leakage when screwed tight.

Cans to be packed in wooden cases, two cans to a case, made of new, well seasoned 7/s-in. sound spruce or North Carolina yellow pine throughout, dressed on outside, with tight, well fitting cover of such size as to take the cans fitting closely; the space between the cans, if any, to be filled by inserting a loose piece of wood full width and hight of can; a strip of wood running diagonally to two corners of the case and fitting snugly therein to be inserted between the top edges of the cans and under side of lid or cover when secured to case; the screw cap of the can to be at least 1/4-in. below the top of the case when the lid is on to prevent pressure upon the caps and handles. Cans and cases to be made in the best workmanlike manner, as per samples to be seen at the general storekeepers' offices at the various navy yards.

The Bureau of Supplies and Accounts has also adopted specifications for kerosene, sperm oil, whale oil, lard oil and boiled and raw linseed oil, but the requirements thereof are understood to be substantially the same as those of the best commercial practice.

W. L. C.

British Columbia Manufacturing Interests.

Toronto, August 24, 1907.—Mining and smelting operations in Southern British Columbia are being seriously checked by a shortage of coke. The smelters in that part of the country are engaged upon silver-lead, copper and gold ores, and have been so employed almost continuously from the time of the establishment of the lead bounty and the renewal of operations in the leading gold mines. The rise in the price of copper also stimulated activity at the mines yielding that metal. Up to the beginning the present week the ore receipts at the several smelters since the opening of the year amounted to nearly 1,000,000 tons. By way of adjustment to the growth of their business the chief smelting companies were considering schemes for enlarging their capacity when restriction in the coke supply began to be felt. plant the Consolidated Mining & Smelting Company was preparing for extensions; improvements were projected at the Granby Smelting Works; the Dominion Copper Company was putting in a blister copper process; the Hall Mine was cleaning up its plant, intending to make some changes in its equipment. In some cases the improvements will be accelerated by the compulsory closing down on account of the coke shortage. Three of the furnaces at Trail are out of operation, and three are still going. At Northport, Le Roi smelter is idle, and the Granby's eight furnaces at Grand Forks were all blown out by the end of last week.

Various opinions are expressed as to the causes of the decline in coke supply. The blame is variously apportioned among the coke companies, the scarcity of labor and insufficiency of transportation facilities. So far as Rossland is concerned, it is said that there is no lack of cars. It is held that there is a shortage of hands in the coal mines and at the coke ovens of the Crow's Nest Pass, and that this shortage is likely to continue until higher wages are paid. The managing director of the Consolidated Mining & Smelting Company favors the opinion that large shipments going from Canadian coke works to United States smelters account for the scantness of fuel supply at Canadian smelters. In the Boundary District the British Columbia Copper Company was forced to blow out one of its three large furnaces. As has already been mentioned, the Granby's eight furnaces in that district were also obliged to close down. The Dominion Copper Company's plant has an adequate supply of coke to keep its three reduction works going. These three Boundary smelting companies all get their coke from the Crow's Nest field. They consume nearly 1,000 tons of coke per day when their fourteen furnaces are working to full capacity.

Steel Works in the Kootenay.

If C. P. Hill, manager of the Hillcrest Coal Mines in Alberta, is able to carry out the project, works for the manufacture of iron and steel will in a short time be added to the metallurgical industries of Kootenay, the portion of British Columbia in which silver-lead and gold-copper smelting has grown so rapidly. Mr. Hill promises that within two years he will have a plant near Kootenay Landing from which steel rails will be supplied to the Canadian railroad lines west of the Rocky Mountains. He says that plans are now being drafted by a Pittsburgh engineer and that in accordance with them construction will be pushed ahead within the next 18 months involving an expenditure of \$2,500,000. Mr. Hill was the locator of the hematite iron ore deposits, lying about 18 miles west of Kootenay Landing, from which the material is to come for the proposed works. It is understood that the deposits were acquired by prominent capitalists connected with the Canadian Pacific Railway Company. So far as the assembling of material is concerned, the point selected for the plant would appear to be a favorable one, the ore body mentioned being convenient and the coal mines with which Mr. Hill is identified at Hillcrest being not too far away. Mr. Hill says that the iron outcroppings have been traced for seven miles, that the veins are ten in number, that the widest measures 23 ft. across, and that the necessary fluxes abound in proximity to the ore.

A Steel Plant for Vancouver.

An iron and steel undertaking of apparently greater magnitude is being promoted by J. Q. Shadforth, who comes from Newcastle-on-Tyne. Vancouver seems to be the point preferred for this enterprise, in which are to be made all forms of rolled steel, especially steel rails and ship plate, a big shipbuilding plant being contemplated as part of the scheme. Mr. Shadforth was in Vancouver a few days ago in connection with his North Pacific Iron & Steel Corporation. He says the company will be registered with a capital of \$15,000,000, of which \$2,000,000 is to be expended at the outset. He looks to British Columbia for some of the capital, and to Manchester and London for the rest.

Structural Steel Works at Vancouver.

Ground has been broken for the erection of a structural steel plant at Vancouver. The demand for forms of this kind has grown rapidly on Canada's Pacific coast, and there is little doubt that there will be a steady, if not swift, expansion of the market there for all classes of steel framework. Besides the facts that there is a very progressive spirit in British Columbia, and that the natural assets of the province are enormous, it is to be remembered that the irregularity of the country as a result of its physical features makes the building of bridges an essential industry there. Inlets, creeks, rivers, passages, and ravines offer plenty of work to the bridge builder. As the new buildings are constructed on modern principles, the growth of Vancouver will itself give a considerable amount of business to manufacturers of structural steel. Last month the building permits in Vancouver amounted to more than \$1,000,000. C. A. C. J.

The Pennsylvania Railroad Relief Fund.-In addition to the Pennsylvania Railroad Company's superannuation and pension disbursements, the latest report of the company's relief fund shows that since the organization of this department in 1886 the beneficiaries of employees have been paid in death claims \$6,815,409.77, and that members have received on account of disablements \$9,880,433.92, or a total of \$16,695,843.69. The disbursements from the fund in July, 1907, covering only the lines east of Pittsburgh and Erie, amounted to \$115,-142.34. Of this amount \$43,321.64 represents the payment of death benefits to the families of members and \$71,820.70 benefits for the relief of members disabled and incapacitated for work in the company's service. Other railroads, as well as industrial concerns, insurance companies and foreign governments, are constantly investigating the Pennsylvania's provident institutions with a view to their adoption.

The Patterson Commutator Truing Device.

There are several reasons why it is not expedient to remove the armatures of large electric generators to dress the commutators in a lathe. It is an expensive, time consuming operation, especially laborious the greater the size and weight of the armature, and requires a lathe of large swing. Once in the lathe the operation is accomplished with facility, but not always with accuracy, for the center holes in the armature shaft are quite apt to be no longer concentric with its journals if the machine has been running for some time. In the end it is decidedly more satisfactory to true a commutator in position-that is, to turn it with the armature in its own bearings. Usually some form of home-made rig or fixture is employed to hold the tool and feed it across the face of the commutator, and occasionally the necessary parts are borrowed from a lathe and adapted in a temporary structure to serve the purpose. It goes without saying that a device especially built for the work is bet-



A Commutator Truing Device Made by the Patterson Tool & Supply Company, Dayton, Ohio.

ter than a makeshift; quite reasonably, therefore, the Patterson Tool & Supply Company, Dayton, Ohio, claims advantages for its new commutator truing device herewith illustrated.

As will be seen, the tool gives practically the two movements which are found on lathes—longitudinal and cross feeds. It is supported either on the floor, being fastened down with lag screws, or is mounted on a block when the vertical adjustment afforded by the column is not sufficient to bring the cutting tool to the proper hight. Generally there is no objection to leaving the block as a fixture for future work, simply removing the tool when the job is completed. The work is, of course, revolved by the regular means employed for driving the dynamo, but at slow speed. The device has a longitudinal feed of 15 in., and a tranverse feed of 5 in., a vertical adjustment of 6 in., and uses a \% x \% in. tool. Its weight is 75 lb.

While being tested on August 23 the lower elbow of penstock No. 14 of the installation in connection with power station No. 3 of the Niagara Falls Hydraulic Power & Mfg. Company burst, flooding the power station and sweeping men and tools before the flood of water that poured with tremendous pressure from the break. The penstock in question is 9 ft. in diameter, and rises 190 ft. from the power house wall to the forebay at the top of the cliff. It was being filled by the by-pass at the side of the main gate. The elbow at the power station was of cast iron, the casting apparently being im-

perfect, so that it burst unexpectedly. Three men were so badly injured that they were taken to the hospital. No lives were lost, but it is remarkable that several were not killed.

Producer Gas for Wire Treatment.

An interesting use of producer gas is in connection with the hardening, tempering and annealing of wire for the springs of shade rollers in the factory of the Stewart Hartshorn Company, Newark, N. J. The equipment, which is now in successful operation, was installed by the Industrial Gas Company, New York. The advantages of using gas instead of coke fires were found to be a saving in fuel, comfortable and clean work, considerably lower temperature in the factory and a uniform quality of wire produced.*

The plant comprises three 10-ft. Herrick gas producers in which bituminous coal is gasified. This producer is known for the special construction of its tuyeres, whereby a uniform distribution of air and steam is effected throughout the producer, generating a high grade gas of uniform composition. The gas is used in the annealing furnaces and also for drying and baking the wire after it has been cleaned (pickled). These applications are not unusual, but a new departure in this factory is the use of gas for hardening and tempering. On account of the small width of the furnaces it was difficult to provide the proper preheating (recuperation) of the combustion air. The wire is first drawn through highly heated molten lead, then through oil and finally through molten lead of moderate temperature. The use of producer gas makes it possible to keep up a uniform temperature of the two lead baths, which results in the production of a uniform product. Formerly, when coke fires were used, the temperature varied greatly, as is easily understood, and a considerable amount of seconds and waste was the result. At present three units of hardening furnaces are in operation and 11 more will be started shortly.

Revenue train mile costs of steam and electric locomotives engaged in similar work have been compared, much to the advantage of the latter, in the Engineering Magazine. The costs may be itemized as follows:

Repairs to locomotives	Steam. Cents.	Electric. Cents.
Wages, engineers, firemen, roundhousemen		

Wages, motormen and helpers		5.38
Roundhouse and shop expenses, repairs, renev		
als, machinery and tools	. 2.49	1.25
Fuel and handling	.10.05	****
Water supply, station, repairs and renewals	. 0.57	
Power delivered at locomotive		17.62
Oil, waste, grease and supplies	. 0.99	0.23
Interest	. 1.41	0.76
Insurance and depreciation	. 2.65	2.03
Totals	36.85	28.94

This difference is seen to be 7.91 cents per revenue train mile, representing 21.5 per cent. of the steam figure. For a service involving an operation represented by 5,000,000 train miles a year this saving would amount to \$395,500 per annum. Moreover, it is equivalent to an additional dividend of about 7 per cent. over and above the 4 per cent. interest charge on the capital invested.

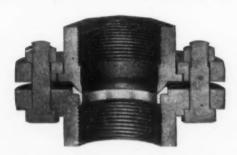
The drawing of copper wire appears to increase both the tensile strength and elasticity. The latter effect is almost nullified by subsequent annealing, and the former partially. To some extent the action seems to be superficial, as the effect is less on a large wire than on a small one. It is customary to draw each size of wire to an extent to give ample strength for its intended purpose, without increasing the cost of the thicker sizes beyond that warranted by the slight increase in strength obtained. Thus, ½-in, wires show an ultimate breaking strength of some 22½ tons per sq. in.; while smaller sizes, with only 80 circular mils, show as much as 30 tons. The elastic limit follows the breaking stress in a fairly constant ratio, being found at 21 tons on the smaller wire, as compared with 17 tons on the larger.

^{*} The Herrick gas producer was described in The Iron Age March 28, 1307.

The Kewanee Flange Union.

To facilitate the assembling of pipe lines with flange joints, the Western Tube Company, Kewanee, Ill., has developed a flange union which requires no gasket and compensates for imperfect alignment. It seats on the principle of a ball joint, as shown in the accompanying illustration, so that the effect of spring in the pipe or crooked threads is corrected. Another feature that contributes to convenience in its use is that it has one flange movable, so that the annoyance of matching the holes for the bolts is entirely done away with. The parts, of which there are four exclusive of the bolts, are the solid flange, the loose flange and its associated nipple and the seat. The latter is brass and is screwed into the solid flange. All of the other parts are malleable iron.

The seat in the brass is concave and that on the nipple convex and both are arcs of circles of the same radius, so that a considerable deviation in the alignment of the coupled parts is permissible. The flanges being made of malleable iron are in no danger of being broken when the joint is pulled together, or later when the line is under pressure, and the junction of a hard and a soft metal at the seat insures a perfect contact, which it is claimed will remain so. By avoiding the use of a gasket a large amount of labor is saved which is required with ordinary unions in the cutting and fitting of gaskets. The company claims to have found by experiment that the extra



The Kewanee Flange Union, Manufactured by the Western Tube Company, Kewanee, Ill.

time taken to cut and fit a rubber gasket and the value of the rubber packing used, together, involve an expense that is more than the difference in price between an ordinary union and the Kewanee union.

It is particularly pointed out that the union is a compact one and very light in weight for its strength and rigidity. The unions before they are shipped are submitted to an air pressure test under water and are rejected if not absolutely tight. They are made in all of the standard sizes from 1 to 10 in. and in either black or galvanized finish.

An Argument for Purchased Power.

One advantage of buying power is the purchaser's freedom from that much responsibility and restriction of his own business. A power plant takes valuable space, and its supply is less reliable than one from a large central station. A company supplying power can sell it cheaper than the individual can generate it, because a large plant is more economical; it uses bigger units, and has a steadier and more uniform load. Power for power, less is invested in large units than in small ones, particularly when the latter, to provide flexibility, must have a much greater total capacity. A large powerhouse may be placed where land is cheap, and a cheaper building permissible; the expense for equipment and labor is also in favor of the large central station.

On the other hand, there is a limit in the profitable size of units. Mechanical unwieldiness enters and interferes with operating economies. With steam turbines the limit is greater, but still exists. The saving in first cost over units of smaller size, while large, is insignificant, and the gain in efficiency is almost microscopic. Nor is there much gain in floor space, for this is determined

largely by the number of boilers and the extent and disposition of the auxiliary apparatus. All things considered, the largest practical reciprocating unit appears to be about 5,000 kw., and steam turbine, about 10,000 to 12,000 kw.

The British Foundrymen's Association.

At the fourth annual convention of the British Foundrymen's Association, held at Sheffield, Eng., August 6 to 8, it was reported that the membership now numbers Herbert Pilkington was re-elected president. In his address the president said that no development in the iron and steel trade is so far behind, not only in commercial methods, but in mechanical arrangement, organization and scientific practice, as the ordinary foundry. Though England exports thousands of tons of foundry iron annually to Germany and other parts of the Continent, Germany alone makes something like twice the amount of iron castings turned out in England. If six different British firms were asked to bid on any line of castings it could be relied on that one bidder out of the six would quote a price below the cost of production. Estimating and cost finding methods are in a very unsatisfactory condition. The speaker predicted that specialization in the production of castings would be an important development of the future.

Percy Longmuir in a paper on "Practice and Theory" referred to the savings commonly claimed for the molding machine. For intricate castings the problem is difficult and it is a question whether the theoretical economies are worth the outlay of capital required. On large runs of repetition work of fairly simple pattern the actual results will no doubt approach the theoretical.

W. H. Sherburn also presented a paper dealing with foundry conditions. He said that foundries are overflowing with "hands" too good to be called laborers and too poor workmen to be called molders. Something ought to be done either by a revised apprenticeship system or by group instruction by foremen given under actual shop conditions.

A feature of the meeting was a session in the laboratories of the department of applied science, University of Sheffield, at which a practical demonstration of pyrometry was given. Papers were read on "Special Alloys for Foundry Use" and on "Changes in Cast Iron During Solidification"

The New York Refuse Burning Plant Abandoned .-The refuse burning plant maintained by the City of New York for lighting the Williamsburg Bridge across the East River has been abandoned after a two years' trial, and the New York Edison Company has been called on to illuminate the bridge. The destructor was used for consuming a portion of the city's rubbish that it had been the custom to take out to sea and dump. were two 100-kw. and one 50-kw. electric generating units. The incinerator disposed of 39,647 loads of rubbish a year. Much of the difficulty in keeping up steam was due to the accumulation of slag, which choked the flues and ran back on the grates. There were also wide variations in the heat.obtainable, and the opening of the large feed holes to put in bulky articles caused contractions, which ruined the incinerator. The necessity of storing the rubbish and rehandling it, since it came in by day and was burned by night, also the greater demand for power in winter, when the supply of rubbish was lighter, were further drawbacks. It was estimated in the beginning that \$10,000 a year would be saved, but the plant was run at a loss.

Details are given by the London *Engineer* of a series of recent tests of a Crossley gas engine. Producer gas was used, the calorific value being 158.5 B.t.u. per cubic foot. The gas used by the engine per brake horse-power hour at 32 degrees F. and 29.92 in. of mercury was 51.94 cu. ft. The thermal efficiency was 31.32 per cent. The engine was found to vary in speed from 119.4 to 121.4 rev. per min., when the horsepower was instantaneously dropped from about 600 to 50.

Poor's Railroad Statistics for 1906.

An advance copy of the introduction to *Poor's Manual of Railroads* for 1906 has been received. It states that the fortieth annual number of this invaluable publication is in all respects the most complete volume of the entire series, embracing 2000 pages of condensed information concerning the railroad, street railroad and industrial corporations of the United States. In view of the present anti-railroad movement, the statistics presented are unusually interesting and instructive.

The average receipts per passenger per mile in 1906 were 2.011 cents, as against 2.028 cents in 1905.

The average revenue per ton per mile in 1906 was 0.766 cent, as against 0.784 cent in 1905.

The average interest rate on railroad bonds during 1906 was 3.99 per cent., as against 3.79 per cent. in 1905; and the average dividend rate on all railroad stock was 3.63 per cent., as against 3.27 per cent. in 1905. These low average rates on capital invested in railroads are highly instructive as bearing on the question of the reasonableness of railroad rates in this country.

The total length of steam railroads completed December 31, 1906, was 222,635.18 miles, as against 217,-341.02 miles at the close of 1905, an increase of 5,294.16 miles. The actual construction during the year was 5516.70 miles, but the net increase was smaller owing to mileage abandoned, transferred to side track, or equipped with electricity.

Following are statistics of track material and rolling stock equipment for the past 10 years:

				I	Revenue ca	ırs.
	Miles	Miles			Baggage,	
	steel	iron	Loco-	Pas-	mail and	
Year.	rails.	rails.	motives.	senger.	express.	Freight.
18972	15,658	26,043	36,410	25,654	8,180	1,234,972
18982	20,804	24,435	36,746	25,844	8,049	1,284,807
18992	28,976	21,387	37,245	26,184	8,121	1,328,084
19002	38,464	19,389	38,065	26,786	8,209	1,350,258
19012	46,811	19,181	39,729	27,144	8,667	1,409,472
1902 2	57,437	17,398	41,626	27,364	9,726	1,503,949
19032	71,013	15,249	44,529	28,648	10,182	1,624,150
19042	82,229	11,708	47,344	29,205	10,417	1,691,427
1905		10,803	49,616	30,777	10,552	1,757,105
19062	97,378	9,265	55,439	33,896	12,295	1,979,667

The subjoined statement shows the miles of railroad, capital stock, bonded debt, bonded debt per mile and cost of all steam railroads in the United States from 1897 to 1906:

Total stock, mort-

				gage bonds, ment oblig &c., represent proximately	ations, ing ap-
	Miles of railroad.		Bonded debt. Total.		
Year.	Miles.	8	\$	\$	8
1897	183,547	5,602,964,449	5,534,432,492	11,518,066,646	62,753
1898	184,894	5,581,522,858	5,635,363,594	11,585,069,036	62,658
1899	187,781	5,742,181,181	5,644,858,027	11,692,817,066	62,268
1900	192,162	5,804,346,250	5,758,592,754	11,891,902,339	61,884
1901	195,887	5,978,796,249	6,035,469,741	12,326,491,526	62 926
1902	199,685	6,078,290,596	6,465,290,839	12,853,927,302	64,371
1903	206,886	6,355,207,335	6,722,216,517	13,525,623,300	65,380
1904	211,074	6,477,045,374	6,908,799,403	14,081,756,366	66,715
1905	214,044	6.741,956,825	7,425,261,901	14,563,199,931	68,038
1906	218,433	7,106,408,976	7,851,107,778	15,593,548,957	71,388

Following is a statement showing the miles of railroad from 1876 to the close of 1906, inclusive:

Miles in	Annual inc. of	Miles in	Annual inc. of
Year. operation.	mileage.	Year. operation.	mileage.
1876 76,808	2,712	1892175,170	4,441
1877 79,082	2,274	1893177,516	2,346
1878 81,747	2,665	1894179,415	1,899
1879 86,556	4,809	1895181,115	1,700
1880 93,262	6,706	1896182,769	1,654
1881103,108	9.846	1897184,591	1,822
1882114,677	11,569	1898186,810	2,219
1883121,422	6,745	1899190,818	4,008
1884125.345	3,923	1900194,262	3,444
1885128,320	2.975	1901198,743	4,481
1886136,338	8,018	1902202,938	4,195
1887149,214	12,876	1903207,335	4,397
1888156,114	6,900	1904212,394	5,059
1889161,276	5,162	1905217,341	4,947
1890166,703	5,427	1906222,635	5,294
1891170,729	4,026		

Railroad construction in the United States by geo-

graphical divisions during the years 1903-1906 was as follows:

	1903.	1904.	1905.	1906.
States.	Miles.	Miles.	Miles.	Miles.
New England	12.26	25.83	65.03	46.32
Middle 3	46.72	236.75	233.83	259.57
Central Northern 4	86.87	565.49	744.36	443.21
South Atlantic 2	19.38	660.37	678.46	681.50
Gulf and Mississippi Val. 6	02.31	728.92	735.64	635.24
Southwestern	91.75	1,715.61	1,140.37	1,432.74
Northwestern 6	83,35	469.50	878.97	1,098.78
l'acific 4	32.59	600.10	573.56	919.34
United States 4,6	75.23	5,002.57	5,050.22	5,516,70

The increase in bonded debt during 1906 was \$425, 845,877, the total funded debt of the steam railroads of the United States being \$7,851,107,778 at the close of 1906, as against \$7,425,261,901 at the close of 1905. The increase in capital stock was \$364,452,151, the total stock at the close of 1906 being \$7,106,408,976, as against \$6,741,956,825 at the close of 1905. The total increase in llabilities of all kinds, including stock, mortgage bonds, real estate and equipment bonds, and floating debt. was \$1,199,615,367.

The total assets of the steam railroads of the United States at the close of 1906 was \$17,534,381,633, an increase of \$1,241,500,810. The surplus of assets over liabilities was \$766,014,237, an increase of \$41,885,443 during 1906.

The following table shows the assets and liabilities of all the steam railroads of the United States at the

close of 1906:		
Asset	ts.	
	1906.	1905.
Cost of railroad and equipment.\$	12,719,736,342	\$12,143,997,551
Stocks and bonds owned	2,544,368,852	2,360,408,416
Real estate and other invest-		
ments	761,413,476	574,868,461
Cash, bills receivable and current		
accounts	941,399,320	772,844,570
Materials and supplies	182,635,253	143,413,351
Other assets	128,591,860	104,816,480
Sinking funds	177,141,525	119,225,016
Prefit and loss	79,095,005	73,306,978
Total assets\$	17,534,331,633	\$16,292,880,823
Liabili	ties.	,
Capital stock	\$7,106,408,976	\$6,741,956,825
Bonded debt	7,851,107,778	7.425,261,901
Other bond obligations	636,032,203	395,981,205
Accrued liabilities	86,218,524	92,646,508
Miscellaneous liabilities	124,319,942	109,332,265
Bills payable and current accounts	722,023,502	620,720,096
Sinking funds, &c	242,256,471	182,853,229
Profit and loss	766,014,237	724,128,794
Total liabilities	17,534,381,633	\$16,292,880,823

The gross earnings of railroads reporting traffic statistics, earnings, &c., embracing 220,633.33 miles, amounted to \$2,346,640,286; an increase of \$234,442,516 during 1906, or more than 11 per cent. The net earnings from operation were \$790,187,712; an increase during 1906 of \$104,723,224, or more than 15 per cent.

The following table shows the income account of the American railroad system as a whole for the year 1906 as compared with 1905:

Income Accounts for All Railroads

Income Accounts	for All Railroad	8.
	1906.	1905.
Receipts:		
Passenger	\$521,231,337	\$486,420,902
Freight	1,659,925,643	1,47 167,246
Other	165,483,306	147,609,622
Total gross earnings	\$2,346,640,286	\$2,112,197,770
Operating expenses	\$1,556,452,574	\$1,426,733,282
Net earnings		685,464,488
Other receipts		80,927,659
Total net income	\$890,480,081	\$766,392,147
Disbursements:		
Taxes	\$68,169,833	\$54,553,620
Interest on bonds	269,926,395	247,155,897
Other interest	13,107,169	12,956,346
Dividends on stock	225,601,245	193,753,869
Miscellaneous	79,806,024	59,856,679
Rentals-Interest	39,612,179	31,716,773
Dividends	27,739,680	22,314,069
Miscellaneous rentals	15,042,783	22,208,880
Total payments	\$739,005,308	\$644,516,133
Surplus		121,876,014

Interesting traffic statistics are as follows:

Miles of railroad operated	220,633.33	215,506.92
Revenue train mileage:		
Passenger	\$488,554,209	\$467,270,447
Freight	608,324,539	559,434,683
Mixed	27,711,651	26,715,494
Totals	\$1,124,590,399	\$1,053,420,624
Passengers carried	815,774,118	745,446,641
	25,842,462,029	23,906,420,668
Tons freight moved	1,610,099,829	1,435,321,748
Freight mileage2	16,653,795,696	187,375,621,537

A suggestive comparison of freight and passenger rates, and the return on stocks and bonds during the past 10 years, is brought forth in the following table:

Railroad Capitalization and Return Thereon.

			Per pas	- Earnir	igs per	
	Divi-	Per tor	senger	mile of	railroad	
Interest	dends,	per mile	, per mil	e. in oper	ation. 1	Per cent.
average	average	average	average			of ex-
rate.	rate.	rate.	rate.	Gross.	Net. I	enses to
Per ct.	Per ct.	Cent.	Cents.	*	8 e	arnings.
18974.24	1.51	0.797	2.029	6,228	1,884	69.74
1898 4.21	1.71	0.758	1.994	6,771	2,111	
18994.26	1.92	0.726	2,002	7,161	2,272	68.27
19004.27	2.44	0.746	2.031	7,826	2,519	68.93
19014.24	2.65	0.756	2.028	8,270	2,668	67.73
19024.10	2.97	0.764	2.012	8,696	2,830	67.45
1903 4.17	3.03	0.781	2.052	9,301	2,887	68.96
1904 4.01	3.31	0.793	2.058	9,248	2,989	67.68
19053.79	3.27	0.784	2.028	9,643	3,135	67.49
19063.99	3.63	0.766	2.011	10,631	3,580	66.33

Copper Steels.

The Pierre Breuil Research.

In the *Journal* of the Iron and Steel Institute, No. 2, 1907, is an account of a research by Pierre Breuil, of Paris, on copper steels. It is a good example of the thoroughness and accuracy with which French experimenters, in any branch of scientific research, conduct their work.

Characteristics of the Steels investigated.

Mr. Breuil's steels were prepared by the crucible process, the ingots weighing 110 lb., and metallic copper containing 99.7 per cent, was employed. A crop end of 33 lb. was removed from the top of the ingot and 11 lb. from the bottom, the remainder being rolled if possible. Four series were prepared. The first consisted of eight members, with carbon about 0.15 per cent. and copper rising from zero to 32 per cent. The second also had eight members, with carbon about 0.4 per cent. and copper rising from zero to 24 per cent. The last member of this series showed a great deal of segregation, the interior of the ingot having, at the bottom, 74 per cent, copper, while the outside had only 24 per cent. The third series, with approximately 0.65 per cent. carbon, consisted of six members, with the copper rising to 32 per cent., while the fourth from 0.5 series, of seven members, contained about 1 per cent. carbon, and copper rising from zero to about 34 per cent. Here again excessive segregation was noticed, the copper in the last ingot varying from 16 to 52 per cent.

Chemical analyses and fractures showed that in all the ingots containing less than 4 per cent. copper there was no exgregation.

In the first three series, ingots containing less than 8 per cent, copper showed no coloration in their fractures. With the fourth series, a coloration was noticed when over 3 per cent was present.

The main recalescence point was lowered by the presence of copper in the first three series, but not below 550 degrees C. (1022 degrees F.), but in the high carbon series it merely elongated this point without lowering it.

Mechanical Tests.

The steels were subjected to very thorough mechanical tests, the results of which are given in detail. From the tensile tests, the author concludes that steels containing copper are closely comparable with steels containing nickel or chromium of the same carbon content, and follow the same laws with regard to their increased tensile strength with increased percentages of copper.

Shock tests were made with both notched and plain bars. The low carbon series, after quenching and annealing, displayed high resilience, while the steels of other series, no matter what treatment they had undergone, were all brittle.

Microscopical examination was made, and the paper is accompanied by many excellent micro-photographs. The copper steels commercially capable of application are analogous to ordinary steels from the point of view of their structure, but their constituents are finer. The presence of copper increases the quantity of pearlite, and, to some extent, it causes the steels to be more highly carburized, and consequently harder. With copper up to 4 per cent., they contain no free copper, that element being in solution in the iron. It is between 4 and 8 per cent, that saturation appears to occur. With over 8 per cent, free copper is found in fibers in the case of soft or semisoft steels, and in nodules in the harder steels.

Corrosion tests were carried out by immersing samples in 1 to 1 sulphuric acid, so that the results might be comparable with those obtained by Hadfield. The loss by corrosion is over 50 per cent, lower in these steels than in the case of steel not containing copper. These results show the steels to rank in value with nickel steel in this respect.

Conclusions.

The author sums up his results in the following conclusions:

- Copper steel does not yield a metal capable of being rolled in practice, if the percentage of copper exceeds 4.
- 2. When in the ingot state copper hardens steel in proportion as there is less carbon present.
- 3. Copper appears to lower the upper change points Ar. 3 and Ar. 2 in soft steels; it intensifies Ar. 1 to an important extent. In medium steel, it lowers this point, but not below 550 degrees C. It does not alter its position in hard steels.
- 4. As regards tensile strength, copper steels as rolled appear to be stronger in proportion as they contain more copper. This difference is the more manifest in proportion as the carbon is lower.
- 5. Annealing leaves the steels with the same characteristics, but greatly reduces the differences observed in the case of the untreated steels, which creates the necessity for care in attempting a classification of these steels.
- Quenching restores the differences encountered in the case of the steels as cast.
- Copper steels equal, from the point of view of tensile strength, nickel steels, and would be less costly than the latter, copper being a cheaper element than alckel.
- 8. In regard to resistance to shock, copper steels are no more brittle than nickel steels containing equivalent percentages of nickel. The steel containing 0.16 per cent. carbon and 4 per cent. copper is truly remarkable in this respect.
- 9. The presence of copper makes the constituents of the steel finer, and appears to alter the categories to which they nominally would belong by approximating them to classes containing higher percentages of carbon. What is particularly advantageous is that while hardening the steel the presence of copper does not render it brittle. It confers upon it a very fair degree of elasticity, while leaving the elongation good, thus conducing to the production of a most valuable metal.

Cutting tests were carried on with the steels containing carbon about 1 per cent, and copper zero, 1 per cent, and 3 per cent, copper respectively. It was concluded that the presence of copper in nowise altered the cutting properties.

The electric resistance of such of the steels as could be rolled was also determined. The presence of copper was found to increase the resistance, and a well defined maximum was shown. This maximum coincides with 2 per cent. in the case of the 0.15 per cent. carbon series, with 1.7 per cent. in steels containing 0.35 per cent. carbon, and with 0.5 per cent. copper, in steels containing 0.7 to 1 per cent, carbon.

G. B. W.

THE IRON AGE

1855-1907.

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RICHARD R. WILLIAMS,						- HARDWARE EDITOR.

Testimony on Business Soundness.

Returns from the annual canvass of the Commercial National Bank of Chicago, embracing this year replies from 30,000 banking and mercantile correspondents throughout the country, show unanimity in the opinion that business conditions are sound and satisfactory. The published summary of the letters has had wide attention. After saying that not one out of the 30,000 negatives the above conclusion in definite terms, it comments as follows:

That there has been a marked easing down from the tension of the spring and winter months of the year is generally admitted, but it is admitted without a trace of regret or misgiving. The country has been rushing ahead at a whirlwind pace until the tax on credit and capital accumulations compelled a respite. The demand for goods to meet instant needs, or to replace other goods destroyed by wars and calamities, or to provide for the certain needs of the future, has been unprecedented. To meet this it has been necessary for the manufacturers and distributive agencies of the entire world to employ almost every available unit of money and to put into action every potentiality of credit. The result is too familiar to all men of affairs to need exposition.

In general it seems justifiable to conclude from the data at hand that any further slowing down of business will be accompanied by moderate recessions in the prices of raw materials without any serious decline in consumption due to decreased purchasing power; and that the recessions in prices will prove to be encouraging rather than discouraging factors in the trade situation. The salability of goods, as far as it is affected by consumptive Jemand, purchasing power and reasonableness of prices, shows no indication of declining for the next three or four months at least; and this, broadly speaking, covers the period of usual stress as far as bank credits are concerned.

On the supply of money and the supply of confidence the situation in the United States largely hinges. Moreover, the latter is no small factor in determining the former. The fall of New York City 4 per cent. bonds to 95, as compared with 110 no very long time back, and now the offer of 4½ per cent. by the city, are not alone an indication of the great absorption of money by the unusual volume of business. They signify also that investors have not full confidence that even the present low values of bonds will not be lowered before the old price is approached—another illustration that with capital timidity grows as values shrink.

So far as the advance in the rate of money is concerned, England and Germany—all Europe, in fact—are having a like experience, with nothing to indicate when the present condition will end, or how much more money will tighten before it relaxes. In Germany, it is believed, the bank rate will again advance to 7 per cent. before the end of the year, and the Bank of England may need again to resort to unusual measures, as it did last year in borrowing gold from the Bank of France, if it escapes the necessity of eventually going to 7 per cent.

The special cause for hesitation in the United States, over and above world-wide money influences, is so un-

usual that no gauge exists by which to measure it. We are told that the campaign against corporations held to have violated the anti-trust or the interstate commerce laws in the past few years has led to a lack of confidence; that already the stream of prosperity has been fouled near its head waters. The 30,000 writers to the Chicago bank have looked at the water flowing past them and have found it clear and of satisfactory volume. The question on which testimony cannot throw great light today is what the volume and character of the later flow will be. For the cure of some conditions there is absolutely no substitute for lapse of time. It is proof of strong resisting powers that with so much sounding of alarms in the past year business has seen so little of catastrophe. Thus far the feature of heavy cancellation of orders that has marked other transitions from prosperous times is absent. The rate at which wealth is being taken from the ground-from farms and mines—is the strongest prop of the iron market and every other market. But there is no reason to believe that capital has acquired any immunity from old time diseases. The country has had hard experience in other times of the swift consequences of a blow to confidence and has seen how slow and painful is the recovery. That experience was acquired at so great a cost that it should not need repeating now. But the recollection of adversity seems to fade quickly and appreciation of good times is liveliest when they have disappeared.

The National Revenues and Tariff Revision.

Our redundant national revenues are beginning to attract attention. Washington advices state that the recent publication of the annual report of the Commissioner of Internal Revenue, showing an increase of \$20,561,284 for the fiscal year 1907 over 1906, taken in connection with the continuing upward tendency of Treasury receipts from all sources, has resulted in the discussion of the advisability of legislation at the coming session of Congress reducing the internal revenue taxes. It is argued in certain quarters that a cut of \$25,000,000 to \$35,000,000 might easily be made, thereby reducing the current annual surplus and eliminating at least one important reason now being strongly urged for the general revision of the tariff. The fiscal year just closed showed a surplus of more than \$87,000,000. During the first six weeks of that year the usual deficit was incurred-due chiefly to the heavy annual expenditure which must be met in July-the balance on the wrong side of the ledger on August 15, 1906, being a little more than \$9,000,0000. On the corresponding date of the current fiscal year the deficit was only \$6,000,000, or a gain of about \$3,000,000 in six weeks. On this showing, the estimate is being made of a surplus of at least \$100,000,000 for the current fiscal

Several of the majority leaders in both houses of Congress have given out carefully prepared statements in which they declare that a Treasury surplus is not a thing to be feared and that no harm will result should the receipts show an annual excess over expenditures of a round \$100,000,000 for the next two years. Senator Lodge, in a speech delivered at Boston, suggested that the surplus be used to curtail the national debt by the purchase of bonds, but he did not indicate the particular issue he would retire, nor did he attempt to justify the legislation that would be necessary to change the terms upon which all outstanding issues were originally disposed of to the public. The point upon which he placed chief emphasis, however, was the "folly of attempting

to revise the tariff before 1909," although he declared himself to be in favor of a general overhauling of the Dingley schedules, which he would postpone for two years solely for reasons of expediency. The suggestion for the reduction of internal revenue taxes comes from several sources, but mainly from those who, like Senator Lodge, would prefer to have tariff revision postponed. A cut in the internal revenue would operate in their estimation as a safety valve to relieve the growing pressure for tariff revision.

It is quite possible that when current commercial and financial developments are carefully considered the agitation for a reduction in internal revenues may lose its force. The maintenance of the present high tide of national revenues is by no means assured. While the receipts from internal revenue taxes were very heavy in the past fiscal year, the receipts from customs were phenomenally large. Our imports far exceeded those of any preceding year. The prosperous condition of the country compelled the importation of much manufactured merchandise because our factories were unable to supply the home demand, while the consumption of foreign made articles of luxury greatly increased. The growth in the value of imports, as pointed out by the Bureau of Statistics, was also in part due to the increased prices of many articles imported, and on these the ad valorem duties brought increased returns to the Treasury. But imports have probably reached their highest point and may be expected to decline. No longer are we buying foreign pig iron to supply famishing foundries. Agencies for foreign made automobiles report their sales greatly curtailed. All along the line materials needed by our manufacturers and luxuries indulged in by the prosperous are in diminishing demand. This means reduced customs revenues undoubtedly. It would be by no means surprising if the current fiscal year should end with a reduction in the annual surplus instead of an increase. In the event of such a financial development those who desire no change in the tariff schedules would shift their position. They would then maintain that to reduce duties would endanger the surplus.

The Cost of Steel.

Some comment was made in these columns one week ago on the remarkable figures given in the United States Steel Corporation's reports, representing appropriations for the construction of new plant. Taking the first half of 1907, the \$33,000,000 set aside from surplus earnings for additional properties and new construction, represented over \$6 on every ton of finished product produced in that time, estimating the present rate of production at nearly 11,000,000 tons a year. That may well be considered providing on a heroic scale for the demand of the future. To make that showing fully significant it should be accompanied by a statement of the equally heroic policy pursued in charging off for depreciation and for maintenance and renewals. The rigor with which such charging off is done and the stringency of present methods of determining cost are features that deserve attention.

It has been usual to speak of the standardization of practice in manufacturing as the great achievement of concentrated control, and the economies resulting from giving all managers in a given line the benefit of the approved methods of the best have been set down among the foremost advantages of consolidations. In the selling department, likewise, the destructive competition of separate competing concerns has given way to the constructive internal competition of parts of the same or-

ganization, all having the benefit of the best in each. Similarly in the departments having to do with cost finding, general accounting and the analysis and distribution of earnings, the advance toward a better basis has been noteworthy, under the standardization of systems of records and the elimination of the old-time looseness in counting profits. It is fair to say that the consolidation era in the steel trade has been as revolutionary in the direction of accounting and fiscal policy as it has been in operating and selling.

Much prominence has been given first and last to a letter written by an officer of a leading steel company in 1899 naming an inordinately low cost price at which that company could manufacture steel rails. That statement has given wide currency to a greatly exaggerated notion of the profits of steel manufacture, and has had a far reaching influence on popular opinion as to the equitable division of wealth jointly produced by labor and capital. Applied simply to cost of assembling raw materials and turning them into finished product through the ordinary processes of blast furnace, Bessemer works and rolling mill, the figure may have been correct. But it was somewhat akin to the claims once made for Southern furnaces of a \$5 cost for pig iron. Methods have vastly improved since the Alabama boomers put that figure on their prospectuses and many economies have been introduced, but no approach to \$5 cost is claimed by any Southern furnace company to-day. The omitted items of royalties and of adequate depreciation, man tenance and renewal charges have had to be made up as the days of reckoning came, in the pouring in of new capital to make up for actual losses of years in which faulty accounting methods deluded managers and directors into the belief that profits had been made. Similarly in the North, certain Lake Superior mining companies, subsidiaries of important steel producers, went on year after year without any regular writing off for ore taken from the ground, roughly offsetting new discoveries of ore against what had been mined and converted into finished steel.

The higher standards of accounting enforced since the advent of large companies with ample capital have brought a basis of financing and accounting that contrasts sharply with that of 20 or even 10 years ago. The United States Steel Corporation's report for 1906, for example, shows expenditures of \$29,316,910 for ordinary repairs and maintenance and of \$19,016,179 for extraordinary replacements—a total of \$48,333,089, or \$4.60 per ton of the 10.578,433 tons of output for that year. Of the above amount the \$29,000,000 for ordinary repairs and maintenance came out before the \$156,000,000 of net earnings for the year was arrived at, and there was also charged off by the subsidiaries, before reporting profits to the holding company, what was considered ample allowance for the depreciation of their respective properties. While the practice of such of the important independent steel companies as publish financial reports is not as clearly indicated as that of the Steel Corporation the general statement is borne out that the present day computation of the cost of a ton of steel takes account of items that were conspicuous by their absence from the cost schedules of the old régime.

James E. York, writing to the Railroad Gazette concerning the rusting of steel ties, refers to the report of J. W. Post, chief engineer of the Netherlands State Railroads, relating to iron ties of beam sections that had been in gravel and sand ballast for 35 years. The original weight of the ties was 125 lb. They decreased in weight from rust and wear one-quarter of a pound per year, or 8% lb. in 35 years.

The American Sheet & Tin Plate Company's Scottdale Extensions.

The American Sheet & Tin Plate Company, Pittsburgh, is making some large extensions and additions to its sheet mill plant at Scottdale, Pa. A number of new steel buildings are being erected by the Pittsburgh Construction Company, the material for which is being furnished by the American Bridge Company.

First on the side next the tracks of the Pennsylvania Railroad will be the new galvanizing plant. This building will be 80 x 310 ft. At the south end of the building will be the pickling and washing vats. Running through its center will be six galvanizing pots, placed in pairs. On the east side of the present brick warehouse will be the annealing building. This will be 50 x 518 ft. It will contain six modern double annealing furnaces with the new ones. A 30-ton crane will be placed in this building to handle the iron and annealing boxes. On the east side of this building, and separated from it by a 12 ft. alley. will be the new mill building to take the place of the wooden structure placed there in the fall of 1872 when Scottdale first had an existence and Everson, Graff & McCrumm started the industries of the town. This new building will be 125 x 276 ft., and will cover the present hot mills from one to six with accompanying furnaces. The latter will be reconstructed and made more modern, while new equipment will be placed in the building in the future. A 30-ton crane will be operated

From the mill building, and connecting with the annealing and galvanizing buildings, will be run a transfer building for the purpose of conveying the iron from one building to the other. This will be 48 x 125 ft., and will be fitted with a 15-ton crane. After the sheets have been rolled they will be conveyed to the annealing building by the electric crane, handled in this building in the same way. Then they will be taken to the galvanizing building with the transfer crane, handled in this building with a crane and deposited in the stock room. The cranes run the entire length of the different buildings and will handle all the heavy work. The cranes are being supplied by the Morgan Engineering Company, Alliance, Ohio. All the machinery will be operated by electricity and will be modern in all respects. These are the beginning of the contemplated improvements that will add very much to the capacity of the Scottdale plant by increasing the number of hot mills from 9 to 24. The completed buildings will extend to the southern end of the property of the company and there reach the line of the right of way of the Pennsylvania Railroad. The galvanizing plant will require about 125 men to operate and will add that number to the pay roll of the company in a short time. With the completion of the entire plant, several hundred more men will be added.

Two British Battleships Launched.

The battleship Bellerophon, launched at Portsmouth, England, July 27, is the largest warship in the British Navy and in the world. Its displacement is to be 18,600 tons, while that of the Dreadnought is 17,000. As in the case of the Dreadnought, the Bellerophon will carry 10 12-in. guns, mounted in pairs in armored barbettes. The Bellerophon is 470 ft. long, and will have engines of 23,000 hp., which will give a speed of 21 knots. The engines will be on the turbine principle. The ship will have four propellers, two on either side, and she will also be fitted with twin rudders. Construction was begun December 3, so that the vessel has been close to eight months in reaching the launching stage, as compared with five months for the Dreadnought, but its launching weight was 7000 tons to the Dreadnought's 6000.

England's third battleship of the Dreadnought class, the Temeraire, was successfully launched August 24 at Devonport. It is the heaviest warship ever launched from a royal dockyard, the launching weight being 7,475 tons, which is 500 tons heavier than the Bellerophon. The Temeraire has a displacement of 18,600 tons and is

to have a speed of 21 knots. Its length is 490 ft., beam 82 ft., draft 27 ft., and indicated horsepower 22,000,

Patent Protection.

Inventors and owners of patents will be interested in a statement of the field to be covered by a new enterprise, the Industrial Surety Company of New York, 41 Park row, New York City, formed to protect patents against infringement. The heavy financial losses caused business men operating under a patent, or patents, will be lessened through the offices of this organization, which will secure to its subscribers their full rights under the law and relieve them of all litigation expense in the event of infringement which cannot be stopped in any other way.

It has come to be generally known and appreciated that in this country a patent of invention is primarily an official certificate of search, indicating the probable patentable novelty of the alleged invention therein claimed, and granting to the patentee the bare right to bring a suit, in good faith, for supposed infringement. The Government in granting a patent is not able to guarantee in advance its validity. It leaves to the courts the matter of determining this and other vital points. this reason the owner of a patent never knows positively, until it has been litigated, just how strong his patent really is. The expense attached to litigation will often cause the owner of a concededly valid patent to hesitate a long time before bringing suit against the most flagrant infringer, and finally decide to submit to the piracy of his rights, if the infringer's resources are in excess of his own, or where the profits from the sale of the article or device do not warrant such a step.

It is to supply the much needed remedy for this existing condition that the Industrial Surety Company of New York was organized. The officers and directors are all New York business men of large means and irreproachable standing in the business community, and their association with the company is active. Charles M. Ams, head of the Max Ams Machine Company and the Max Ams Preserving Company, is president; William H. Fischer of B. Fischer & Co. and the American Encaustic Tiling Company, is vice-president: the secretaryship is in the hands of Gustave H. Kolb of the Mauser Mfg. Company, while Charles E. Diefenthaler of B. Fischer & Co. is treasurer. These men, together with Emil Kohler of the American Encaustic Tiling Company, Carl Reinschild of the Reinschild Chemical Company and Pierre V. R. Key, general manager of the company, form the Board of Directors.

The Industrial Surety Company announces that its purposes are to furnish an efficient and an honest service; to protect where protection is needed and warranted by the apparent strength of the patent; to save annoyance to its subscribers, and to earn the annual premiums (which are reasonable and moderate) through the service furnished, even should there be no occasion for litigation, the latter made possible through the public notice which the contract holder may see fit, in any proper manner, to give of the obligations of the company. Under this plan values now in doubt will be to a large extent determined and established and the patents protected thereby will be rendered more salable and command higher prices. The maintenance of a patent department by manufacturers and dealers, instead of being at a cost which cannot even be approximated and under certain not unusual conditions is sure to be prohibitive, may be accomplished at a fully predetermined, moderate and profitable outlay. It is the expectation of the company ultimately to occupy a position as an authoritative adjudicator of alleged patent infringements and to be able, through its strength, expert ability, experience and fairness, to settle differences quickly, without costly litigation and without financial loss to the disputants.

The Interstate Engineering Company, Bedford, Ohio, completed within 60 days a contract for erecting a new steel building containing 500 tons of steel for the new plant of the Superior Foundry Company, Cleveland, Ohio.

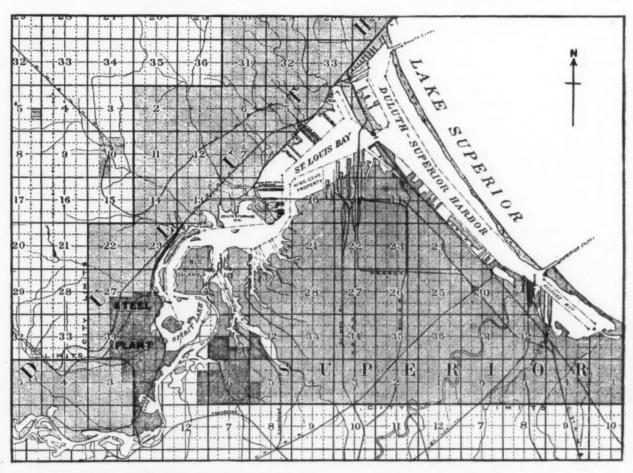
The Minnesota Steel Company.

The United States Steel Corporation's Duluth Steel Plant.

The Minnesota Steel Company, a branch of the United States Steel Corporation, has commenced the work of surveying its site in Duluth, and G. L. Reis. who is to be its manager, is on the ground. It is not probable that any work can be done this year further than to erect some dwellings for employees, make railroad connections with the ground, and complete a thorough topographical survey. Mr. Reis does not expect to be able to place foundations for the mills, &c., until next year. The plant is intended to include, at the start, byproduct coke ovens, one modern blast furnace, six or seven open hearth furnaces, and billet and finishing mills.

preferred and common stock in the past no dividends have been paid for a year, the purpose being to accumulate a surplus and cease borrowing money. The surplus was \$1,088,469, as shown by the balance sheet of July 1, against \$509,702 the year previous. The present capacity of the company's Monessen mills, near Pittsburgh, is 200 tons a day, while the company requires for its wire trade only about 100 tons a day. A five-year contract has been made by which surplus steel is sold to another manufacturing concern.

Commercial Training for Engineers.—The London Engineer refers to the action of Birmingham University in requiring that technical students take in their last year a course in accounting specially designed for engineers. This is spoken of as tardy recognition of the value to engineers of commercial training. Our contemporary adds: "Our own experience goes to show that the



Map Showing the Location of the Site for the Minnesota Steel Company's Plant.

The company has bought a large track of land facing on the St. Louis River and the Duluth Harbor, with more than three miles of water frontage and some 1700 acres of land, in addition to the riparian rights. The site lies some two miles up river from the works of the Zenith Furnace Company, which operates a 200-ton furnace, and Otto Coking Works, and is eight miles from the harbor entrance. The works of the Great Northern Power Company, which will be developing 30,000 hp. hydroelectrically in a very short time, are a few miles up the river. The now abandoned right of way and grade of the Duluth & Winnipeg Railway crosses the property. The accompanying map shows the location of the site with reference to Lake Superior and head of the lake centers of population.

The Page Woven Wire Fence Company's stockholders voted on July 24 to reduce the common stock from \$5,000,000 to \$1,000,000 by changing the par value from \$100 to \$20. The preferred stock amounts to \$1,000,000 and bonded debt to \$1,400,000. Chicago papers say that as against payments of 7 and 5 per cent., respectively, on

last question the college student asks himself or any one else is, how much a given part of a machine costs, the value of coal or iron, how much work a given machine tool should turn out in a day? and so on. The bare fact that he has to learn bookkeeping will teach him that things mechanical have to be paid for; that they represent pecuniary transactions, and that ultimately he may be intimately concerned with such matters."

Francis L. Robbins, president of the Monongahela River Consolidated Coal & Coke Company, Pittsburgh, at a recent meeting of the River Improvement Commission, declared that his company had invested \$10,000,000 in river craft engaged in trade between Pittsburgh and New Orleans. The annual output of this company is 1,500,000 tons of coal, of which one-third is used locally, one-third sent to the lower railroad ports and the remainder sent to the Northwest and Canada. Mr. Robbins said that the canalization of the Ohio River, especially if it brought a permanent 9-ft. stage, would be of tremendous influence in lowering the cost of transportation, and also in permitting a more liberal movement to the South.

PERSONAL.

D. N. Carlin, manager of sales of the Thomas Carlin's Sons Company, Allegheny, Pa., sailed for Europe August 21, expecting to spend considerable time in England and Germany.

George H. Smith of Beaman & Smith, machine tool builders, Providence, R. I., has returned from a three months' pleasure trip in Europe.

Reinhardt Daae, who has been connected with leading American steel companies, and latterly was chief draftsman and superintendent of the rolling mill department of the Monterey Iron & Steel Company, Monterey, Mexico, has opened an office as consulting engineer in the House Building, Pittsburgh, Pa.

J. B. Kennedy, New York representative of the Wirt Electric Company, resigned that position on the recent purchase of the company by the Cutler-Hammer Mfg. Company, and is now engaged in the chief engineer's office of the Department of Water Supply, Gas and Electricity of the City of New York.

Stephen P. M. Tasker, lately with the Wm. Cramp & Sons Ship & Engine Building Company and the Navy Department, has opened a general engineering office in the Pennsylvania Building. Philadelphia.

F. B. Maltby, who has been connected with the Panama Canal work as principal assistant engineer to J. F. Stevens, has resigned to enter the service of Dodge & Day, engineers and constructors, Philadelphia, in the capacity of chief engineer. He is a graduate of the University of Illinois and has had long experience in railroad construction, municipal engineering and irrigation work. He has been connected with the Panama Canal for several years. The preliminary plans and construction work for the great Gatun lock and dam were done under his direction.

The Pennsylvania Shafting Company, Spring City, Pa., has re-elected Dr. William P. Snyder president and Willard Parker, vice-president and general manager.

J. M. Bush succeeds H. F. Ellard, recently resigned, as superintendent of the Ashland mine of the Cleveland-Cliffs Iron Company, at Ironwood, Mich.

C. J. Connell has been appointed assistant secretary in charge of accounting and Frederick Blanchard has been appointed credit manager in charge of credits and collections of the Universal Portland Cement Company, Pittsburgh and Chicago.

James McGrath has resigned as general manager of the Connellsville Machine & Car Company, Connellsville, Pa., and has been succeeded by Grant Myers.

John F. Lewis, assistant general manager of the Edgar Thomson steel works and blast furnaces of the Carnegie Steel Company, has returned from Europe. He is mentioned as the probable general superintendent of the new steel plant at Gary, Ind.

John Jermain Porter, for a number of years blast furnace chemist and superintendent, and latterly engaged in consulting work, has been appointed assistant professor of metallurgy at the University of Cincinnati.

Thomas Mitchell, who has been connected with the Chester plant of the American Steel Foundries for a number of years, latterly as superintendent, has resigned to accept a position with the Reliance Steel Foundry Company, Delawanna, N. J.

Nathan A. Taylor of the N. & G. Taylor Company, Philadelphia, tin plate manufacturer, arrived from abroad August 27.

S. C. Phillips has retired from the presidency and general managership of the Elwell-Parker Electric Company, manufacturer of dynamos, motors, &c., Cleveland, Ohio. George C. Wing was elected a director of the company as his successor on the board at a meeting of the stockholders last week. A new president and general manager will be elected next week.

Philip B. Gale, manager of the Hartford Machine Screw Company, Hartford, Conn., was presented with a silver loving cup August 22 by the employees of the company at festivities in the company's new factory building. The cup is suitably inscribed to denote the esteem in which Mr. Gales is held by the donors. It was through his efforts that the club plan of luncheon and recreation rooms was inaugurated at the works, as described in detail in a recent issue of *The Iron Age*. The presentation address was made by Mayor William F. Henney of Hartford. The Employees' Mutual Benefit Association conducted the entertainment on this occasion and raised a considerable sum of money for its treasury.

Paul Butler, a Lehigh University graduate, has been made assistant foreman of the Pennsylvania Steel Company's open hearth department, Steelton, Pa.

Joseph Wharton, who has been ill at his summer residence in Rhode Island, is very much better and is expected to return to Philadelphia next week.

OBITUARY.

ITHAMAR MARION BUTLER died at Youngstown, Ohio, August 21, aged 71 years. He was born at Center Furnace, near Bellefonte, Pa., June 7, 1836, and from boyhood up had been connected with the iron and steel business until three years ago, when his health failed and he was obliged to retire. His first experience was with the firm of James Ward & Co., Niles, Ohio, in the capacity of salesman. Subsequently he organized the firm of Butler, Edwards & Co., which firm was in turn succeeded by Butler, Condit & Co. and Butler, Wick & Co. This house, located at Cleveland, handled the products of the Falcon Nail Company at Niles, and the other concerns operated by James Ward, and was very prosperous up to the time of the Ward failure. It was found that so large an amount of accommodation paper had been issued for the benefit of the Ward interests that the house was irrevocably swamped. Mr. Butler then acted as salesman and Chicago representative for the Sharon Iron Company and Arms-Bell Company. His acquaintance among the purchasers of iron and steel was almost unbounded, as he traveled literally from Maine to Georgia. He was a man of sterling integrity, energetic and industrious. Surviving him are his daughter, Mrs. W. N. Ashbaugh of Youngstown, and his two sons, Joseph M. Butler of Chicago and Miles E. Butler of Hubbard. He was a brother of Joseph G. Butler, Jr., of Youngstown and James Butler of Cleveland.

SAMUEL G. ROLLINS, who died at Boston, August 16, at the age of 87 years, was formerly prominent as an inventor of machinery, and was a proprietor of a machine shop at East Boston. During the Civil War he was in charge of the construction of turrets for monitors at the Boston Navy Yard.

Mexican Industrial Notes.

A company is being formed in Guadalajara to operate under concessions held by Manuel C. Gallado of that city to utilize the waters of the Santiago River for the purpose of developing power to be used for industrial enterprises and the water of Laka Chapala for irrigation. The concessionaire asserts that 60,000 hp. can be developed from the fall of the river.

Freight rates on small shipments of hardware, iron and steel are increased in the new tariff lists issued by the Mexican railroad companies.

A large increase in the quantity of mining machinery, hoisting gear, &c., arriving at border points from the United States, is reported by local railroad officials.

The German hardware firm of Sommer, Herrman & Co. of the City of Mexico, has been reorganized, with the title Sommer, Herrman y Compania, Sucesores. The business will continue as heretofore.

A new concern engaged in handling mining and general supplies has been organized in the capital with head-quarters at No. 2 First San Francisco street. The title of the new enterprise is the Supply Company, S. A. W. J. Wilson is president; C. F. Owens, vice-president and treasurer; M. P. Phillips, secretary.

Increase in Machinists' Wages Refused.

A special meeting of the New York and New Jersey Branch of the National Metal Trades' Association was held August 21 to take action on the demand of the International Association of Machinists and of the Amalgamated Society of Engineers for an increase of 25 cents a day in the wages of machinists in New York and vicinity. The secretary, Henry C. Hunter, made the following statement as to the attitude of the employers:

The members in the discussion of the demand were confronted with the fact that present business conditions indicate an end of business prosperity for some time to come. Reports from the members showed a reduction in business of from 25 to 30 per cent. In the present year, but principally during the last month, and the still more discouraging condition of almost a cessation of inquiries for future business. The members of the branch came to the conclusion that they could not consistently grant a general increase in wages to machinists or to any other trade.

On August 23 a committee of the employers' association met a committee representing the two labor organizations and presented the following as the action taken unanimously at the meeting two days previous:

Whereas, It is the sense of this meeting of the New York and New Jersey Branch of the National Metal Trades Association that the present industrial conditions and outlook for future business do not warrant a general increase in wages; and

Whereas, The branch, notwithstanding these conditions, desires to be absolutely fair to its employees; therefore it is

Resolved, That the branch hereby requests each of its members to consider carefully the wages of the machinisis in his employ, and if a member determines that a machinist is entitled to an advance in wages that he grant to such machinist such an increase as he believes he is entitled to receive.

The Executive Committee of the machinists appointed a meeting for August 28, to consider the question of ordering a strike. Twenty-nine members of the New York and New Jersey Branch of the National Metal Trades Association have union employees, on whose behalf the demand for an advance has been made. Such employees in association shops number between 1700 and 1800. Since January 1 advances have been made to machinists employed by most of the 29 companies referred to, these averaging 17 cents a day and affecting between 800 and 900 men.

Labor Notes.

J. C. Stewart, general manager of the Erie Railroad Company, wrote a letter some time ago replying to an inquiry concerning the published statement that that company had paid for immunity from strikes of machinists in its shops. He said that for several years the company paid in quarterly installments to a business agent of the International Association of Machinists \$10,000 a year to be made exempt from strikes. As long as these payments continued there was no trouble, but when they ceased agitation began, gradually increased, and culminated in the general strike of Erie machinists in May.

The Rhode Island branch, National Metal Trades Association, has established an employment office at Providence, with Joseph A. Holland in charge as secretary of the association. Since the office was opened in June there have been a very large number of applicants for employment, and many men have been sent to positions to the mutual benefit of themselves and the members of the association. L. W. Downes, D. & W. Fuse Company, Providence, is president of the association; Henry D. Sharpe, Brown & Sharpe Mfg. Company, vice-president, and Herbert J. Burrough, Builders' Iron Foundry, treasurer.

It is announced that the American Federation of Labor will not oppose the granting of an injunction against the use of its "unfair list." as asked for by J. W. Van Cleave, president of the Buck's Stove & Range Company, St. Louis, in the Supreme Court of the District of Columbia. Instead, the Federation will carry the case to the Supreme Court of the United States, hoping for a decision that will make this and many other injunctions against labor organizations unconstitutional. The contention of

the unions will be that such injunctions deprive them of the rights of "free speech, free communication and peaceful assemblage."

Electrical Canal Haulage.

On the French Government canals near Douai, electric haulage has been practiced for some time. The canals are about 63 ft. wide and 7 or 8 ft. deep. The barges are 117 ft. long, 16 ft. wide, and carry 290 tons at 5 ft. 10 in. draft. The ratio of barge section to canal (0.2, nearly), is very high, consequently the necessary tractive effort amounts to 3 lb. per ton at 1.9 miles per hour, the maximum speed allowed loaded barges. About 35 miles of canal is electrically equipped, and about 90 per cent. of the haulage over this is electric.

On the older parts the Denéfle tricycle is still used. This weighs 2.5 tons, and has an efficiency of only 42 per cent. As part of the towpath is in bad condition, upsets are frequent. A large part of the canal is now equipped with 40-hp. locomotives running on a light railway track. Power is economized, for that required for the tractor alone is but 2 kw., as against 13 for the tricycles. The locomotives run in either direction, and, there being only one track, they exchange barges and reverse direction whenever they meet. The towropes are fixed to towing masts, on the barges, which can be raised or lowered, to permit passing. Current is taken by a trolley from a flexible cable and the return circuit is through the rails and the canal, which is said to offer the better path.

Power is now supplied from four small generating stations, which are to be supplanted by a single station supplying three-phase current at 26,000 volts to motor generators at substations.

Although hard drawn copper wire has been declared to elongate not more than 1 per cent, without fracture, this is scarcely true under practical testing conditions. Soft copper wire under increasing load has a steady. permanent elongation, practically uniform throughout the length under test, until near the breaking point, when a local elongation takes place at that spot. This local elongation being small in proportion to the total, the result is little affected by the length of the test piece. With hard drawn wire, the increase of length is small, until the fracture point is reached, and the local elongation forms a large percentage of the total. Consequently. if the elongation is measured up to the actual fracture. the percentage is a decided function of the length. The test pieces usually are only 8 or 10 in. long, and the total elongation is correspondingly small. Therefore, although fairly uniform measurements may be obtained, the readings will be affected by unavoidable sources of error, and are usually much higher than those obtained with the long specimens from the same material.

The protection of metals by plating with copper or other metal is occasionally found desirable, but often inconvenient, because of the large size of vat which would be necessary. An expedient tried with excellent results consists in applying the electrolyte with a paint brush attached to one pole of the source of current. A smooth, adherent and strong coating of metal may thus be built up to any desired thickness. The process has been successful in plating with silver, gold, copper and nickel. The latter was found preferable for protective purposes, because of the low voltage required. Cyanide solutions were used for the gold and silver and sulphate solutions for the copper and nickel.

Trustees of the Great Northern ore properties announced on August 26 that an initial distribution of \$1 a share would be made on September 16 to holders of permanent certificates. The Great Northern Ore Trust was formed December 7, 1906. The certificates have no stated par value, but as there are 1,500,000 outstanding, the payment means a distribution in cash of \$1,500,000. The trustees do not say whether the distribution of \$1 a share is an annual one. In the past week Great Northern certificates have sold at \$46 to \$47.

NEWS OF THE WORKS.

Iron and Steel.

Application has been made for a Pennsylvania charter for the Eisen-Steel Mfg. Company, Philadelphia, Pa., to engage in the iron business. The men interested are M. Luther Leffler, John J. Stell, J. Parker Crittenden and Charles T. Harrep, of Philadelphia.

The Pennsylvania Steel Company is repairing its No. 1 furnace at Steelton, Pa., which has been in continuous service for a long period. It will be started as soon as possible.

The McInnes Steel Company, Limited, Corry, Pa., has completed a 30-pot crucible furnace for the manufacture of special grades of high speed steel and steel castings. The company has also added two steam hammers and a new power plant, consisting of two 75-hp. gas engines.

An aerial tramway 3000 ft. in length, a mile of railroad and an electrode plant are immediately to be added to the equipment of the electric iron furnace at Héroult, Cal. The determination to build a plant to manufacture electrodes on the ground was induced by the fact that the supplies obtained are not as satisfactory as electrodes made under the Héroult patents.

The United Iron & Steel Company is remodeling its Fannie Furnace at West Middlesex, Pa., general contract for the work having been placed with the Knox-Murray Company, Pittsburgh. The contract consists of putting in a new dust catcher, Mullen gas washer, building new stove 21 x 85 ft., piping, &c. The ironwork for the stove will be furnished by the Meehan Boiler & Construction Company, Lowellville, Ohio, while the plate work will be furnished by the Niles Boiler Company, Niles, Ohio. All the cast iron work will be done by the Darlington Foundry Company, Darlington, Pa. The bronze cooling plates will be made by the Keystone Bronze Company, Pittsburgh, and the Smeethe Copper & Bronze Company, Chicago, Ill.

The open hearth plant at the Shenango Works of the Carnegie Steel Company at New Castle, Pa., has been closed down for repairs. This plant furnishes tin bars to the Shenango Works and the New Castle Works of the American Sheet & Tin Plate Company at New Castle, Pa., and while it is closed down tin bars will be furnished from the Ohio Works of the Carnegie Steel Company at Youngstown, Ohio. This plant, which has been running on rails, is now working on billets and tin bars, and will continue to do so until the Shenango Works has started up again.

The S. R. Smythe Company, House Building, Pittsburgh, has received a contract for the building of a gas producer plant for the Tyler Tube & Pipe Company, Washington, Pa.

The plant of the Cumberland Steel Company, Cumberland, Md., was almost entirely destroyed by fire last week, and it will be several months before operations can be resumed. The company manufactures ground and polished steel shafting.

General Machinery.

The Modern Machine Company, St. Louis, Mo., is building a plant, 50 x 150 ft., for the manufacture of embossing presses, gasoline engines, back saws and portable cylinder boring bars. The company will also do repair work of all kinds and will take contracts for furnishing special machinery. Samuel L. Curtis is president; George Remnsnider, vice-president and general manager, and F. C. Hippler, secretary and treasurer.

The recently incorporated Tschudi-McBarron Machine Company, Dayton, Ohio, will take up an existing plant and will need no additional machinery at present. The company will manufacture sensitive bench drills and punches, presses, special machinery and will pay attention to special machinery work.

The co-partnership of J. D. Danielson & Co., manufacturers of special machinery, tools and hardware specialties, Jamestown, N. Y., has been dissolved and the business taken over by the Crescent Tool Company, incorporated for that purpose. The officers as well as the stockholders of the new company were formerly associated with the business. A new drop forging department has recently been added to the plant, which with the addition of special machinery and other extensions will enable the corporation properly to take care of its increasing business.

The Keystone Driller Company, Beaver Falls, Pa., manufacturer of portable well drilling and prospecting machines and Hownie deep well pumps, is making some extensive improvements and additions to its plant. A building, 100 x 275 ft., is being remodeled to be used for an assembling room, for which the necessary machinery has been bought. A 40 x 80 ft. power house is being erected, in which will be installed upright water tube boilers and a 175-hp. engine, with a 100-kw. dynamo, for which contracts have been let. The company is also building a combined brass, iron and steel foundry, 100 x 300 ft. The contracts for the building, crane, cupolas, &c., have been placed, but a requisition will shortly be issued for some minor equipment, such as a steel converter, dry pans, blowers, cold saws, emery wheels, &c.

Papers have been filed incorporating the Pacific Engineering

Works under the laws of California to manufacture machinery. Phœnix, Ariz., and Los Angeles, Cal., are named as places of business. The capital stock is \$500,000. The directors are Louis R. Johnson, Edgar L. Hillingshead and Fred K. Caswell.

The Standard Connecting Rod Company, Beaver Falls, Pa., is making an addition, 50 x 100 ft., to its machine shop, which will be completed next month. Some of the machinery now in the old machine shop will be moved into the new building to allow more room, and some new equipment will be installed in the near future.

The L. S. White Forging Company, Endicott, N. Y., has completed its new plant, which is equipped with the latest improved machinery for the manufacture of forgings. L. S. White, who organized the Union Forging Company, Union, N. Y., and was its president until he sold his interest in that company, is president; Charles E. White, secretary, and Herrick Rodgers. formerly of the forging department of the Bethlehem Steel Company, general manager.

The Blaisdell Machinery Company, Bradford, Pa., has authorized a stock increase for business purposes of \$100,000.

The Hoosier Drill Company, division of the American Seeding Machine Company, Richmond, Ind., has in part completed extensive plant improvements undertaken recently. The foundry building, 150 x 200 ft., of saw tooth construction, is now ready for operation, and is equipped with one No. 9 cupola, having a melting capacity of 18 tons per hour, in connection with which a Connersville positive blower of 45 cu. ft. capacity is used. An auxiliary cupola of 12 tons capacity has also been installed to take care of heats of extra size. Floor space sufficient for 97 molders is provided in the new foundry, together with upto date core rooms, ovens, pattern storage and other modern conveniences. In addition to the foundry building, a blacksmith shop 93 x 215 ft., also of saw tooth construction, and a grinding and cleaning room, 40 x 193 ft., are being erected, and a new woodworking and paint building, three stories and basement, 50 x 232 ft., of mill construction, is now approaching completion. Work is also in progress upon an assembling and storage building, three stories and basement, 50 x 200 ft., of mill construction, together with a cold storage and a fireproof dipping building.

The partnership heretofore existing between Joseph P. Jageman and Frank P. Sidenstricker, under the name of the Pittsburgh Conveying Machine Company, has been dissolved and the business will be continued by Mr. Sidenstricker at Fourth street and Duquesne way, Pittsburgh.

The Knox-Murray Company, Machesney Building, Pittsburgh, agent in the Pittsburgh District for the Northern Engineering Works, Detroit, Mich., has recently sold the United Iron & Steel Company a 10-ton traveling crane; one 5 and one 10 ton three-motor crane, together with a 5-ton trolley, to the Crucible Steel Company of America; one 10-ton hand power crane, Petroleum Iron Works, Sharon, Pa.; one 15-ton hand power crane, Reinforced Brazing & Machine Company, Pittsburgh; one 5-ton hand power crane, Republic Engineering & Mfg. Company, Allegheny. Pa.; five jib cranes, Rochester Bridge & Iron Works, Rochester, Pa.; two 10-ton travelers, Standard Plate Glass Company, and one 10-ton traveler to the Cambria Steel Company, Johnstown, Pa.

The American Railways Company, Philadelphia, Pa., has secured property in Dayton, Ohio, and is about to build new car barns and repair shops for the Peoples Railway Company. Dodge & Day, engineers and constructors, Philadelphia, have been commissioned to draw up plans for the construction of the buildings.

The Stevenson Machine Company, Buffalo, N. Y., manufacturer of routing machines and other woodworking machinery, is erecting a two-story brick factory building, 40 x 110 ft., at Washington and Goodell streets.

Power Plant Equipment.

The Pittsburgh Valve, Foundry & Construction Company. Twenty-sixth street and Allegheny Valley Railway, Pittsburgh. has secured a large contract for the steam piping system, including valves and fittings, for the power house being built by the Jones & Laughlin Steel Company at its new plant at Aliquippa, Pa.

Bridges and Buildings.

Vollkommer & Co., engineers and contractors, Empire Building, Pittsburgh, have completed the erection of a power building at the plant of the Allegheny Plate Glass Company, Hite, Pa. This firm is also supervising the erection of a steel constructed addition to the latter company's grinding and polishing departments, consisting of 80 ft. span by 42 ft. long, and has also under construction a steel open hearth building, 65 x 200 ft., with two lean-tos, for the North American Steel Company, Bellington, W. Va., the power house and rolling mill building having already been completed.

The Penn Bridge Company, Beaver Falls, Pa., has received a contract for a steel frame warehouse to be erected for the Marine Corps at Philadelphia, and will also furnish the bear traps for dam No. 18, now being erected by the Government across the Ohlo River.

The Riter-Conley Mfg. Company, Pittsburgh, has received contract for the erection of a steel building, 80 x 250 ft., two stories high, for the Pittsburgh Waste Company, at Swissvale, Pittsburgh. Westinghouse motors will be installed in the new building.

A new company has been organized at Pittsburgh by A. L. Over, R. L. Smith and T. P. Trimble, and will carry on a general business in iron and steel construction work.

Foundries

The Monarch Steel Castings Company, Detroit, Mich., maker of the Monarch, Solid and Detroit couplers and coupler attachments, is extending its plant by the addition of two buildings, one 54 x 100 ft., and one 40 x 60 ft., contracts for which have been let. These improvements are to be ready for occupancy within 60 days, and when completed will increase the capacity 50 per cent.

The Pratt & Letchworth Company, Buffalo, N. Y., iron, steel and malleable castings, is adding a separate office building to its plant on Tonawanda street.

The Rensselaer Mfg. Company, Troy, N. Y., has under consideration the erection of a new foundry, but it is not likely that building operations will be begun this year.

The Keystone Bronze Company, Pittsburgh, is making an addition to its foundry which will double its capacity. A new building, 55 x 110 ft., is being constructed by the Pittsburgh Bridge & Iron Works, which will be of steel construction. Two 5-ton hand power Northern cranes will be installed by the Knox-Murray Company, Pittsburgh. The new addition was made necessary by the large amount of new business, and to take care of the increased orders the company has for the Knox patent open hearth frame and door.

The Dutcher Company, Milwaukee, Wis., manufacturer of steel castings, has practically completed the additions to its plant which were commenced last spring, when the company was reorganized from the J. A. & P. E. Dutcher Company. The improvements consist of additions to the molding and cleaning shops and the power house, and the installation of new motors and engines. To the molding shop a 60 x 70 ft. addition has been erected; to the cleaning room, 40 x 48 ft., and to the power house, 38 x 60 ft. All of these buildings are of mill construction, with saw toothed roofs, and were erected at a cost of \$40,000. A 10-ton furnace has been purchased, and it is believed that with the additions and new equipment the present annual capacity of the plant, 1000 tons of steel castings, will be increased at least 50 per cent.

The plant of the Rock River Mfg. Company, Dixon, Ill., consisting of a foundry and pattern shop, has been purchased at bankrupt sale by the Dixon Mfg. Company, Dixon, Ill., which was recently incorporated with a capital of \$10,000. The new company is now in the market for foundry supplies. The incorporators are David H. Spencer, Henry U. Bardwell and Abaline C. Bardwell.

Harvey M. Ream has commenced the erection of a small foundry at Lebanon, Pa., for the manufacture of sash weights and light work. He was formerly connected with the Buchanan Foundry at Lebanon.

Hardware.

The Penn Hardware Company, Reading, Pa., is erecting an important addition to its plant, 60 x 100 ft., six stories. The hight of the new building proper will be 95 ft., and at each of the corners facing on Water street the company will erect two brick water towers, rising 120 ft. above the street. On each of these will rest a 25,000-gal. storage tank for feeding the automatic sprinkler system which the company will install throughout the entire plant. The new building will be of the latest design slow burning mill construction, with an inclosed fire escape staircase. This building will give employment to 150 or 200 additional hands, making a total of about 1000 persons on the payroll of the company.

The Kiel Mfg. Company, Omaha, Neb., with office and factory at Tenth and Seward streets, has lately been organized with a capital of \$15,000, of which \$10,000 has been paid in. Geo. H. Reiff is secretary. At the present time the E-Z washing machine is the sole product of the company, but it will before long take up the manufacture of other goods.

The Detroit Wire & Iron Works, Detroit, Mich., maker of wire cloth and wire goods, now located in its new factory at 37-39 First street, has increased its capital stock from \$6000 to \$15,000. New machinery has been added and the company has extended its output of wire cloth and other wire specialties, including Smith's Never Escape rat traps, of which it is turning out 12 gross per day. The officers of the company are: T. L. Smith, president and general manager; J. H. Gregg, vice-president; C. Hoffman, secretary and treasurer.

A fire that occurred on August 5 in the plant of the Meyercord Company, Chicago, maker of decalcomania transfers, completely destroyed one of its buildings, together with contents and steam presses and the motive power plant. Work, however, is being carried on in the remaining buildings, and by working double shifts the output is already up to normal. Plans for

rebuilding on a larger scale have already been completed, and eight carloads of steam presses and other machinery have been purchased. When the improvements now in progress have been completed the plant will be one of the most up to date of its kind in the country.

The H. L. Dixon Company, Pittsburgh, manufacturer of glass making furnaces, annealing lehrs, &c., will complete the plant of the John B. Higbee Glass Company at Bridgeville, Pa., this week. The old United States Glass Company at Greensburg, Pa., has been sold to a Pennsylvania corporation known as the Stahl Glass Company, which will remodel the plant for the manufacture of flint bottles. Contract for two continuous tank furnaces for installation in this plant has been awarded to the H. L. Dixon Company.

The Champion Mfg. Company, Chicago, has been incorporated with a capital of \$50,000 for the manufacture of hardware specialties, and is located at Seventy-sixth street and Greenwood avenue. The officers are Charles P. Dunbaugh, president; James W. Eastland, secretary; Amos C. Fitz, superintendent.

The Parlin & Orendorff Company, maker of agricultural implements, Canton, Ill., is opening a branch at Winnipeg, Manitoba, which will be incorporated under the name of Parlin & Orendorff Canadian Plow Company, with an authorized capital of \$100,000, full paid. The establishment of this branch is for the purpose of taking care of the trade in the Northwest, the development of which in the past few years has been on a remarkable scale. Pending the completion of organization, the officers have not yet been elected.

The Hamilton Emery & Corundum Company, Chester, Mass., manufacturer of pure Turkish and Naxos emery, is to build a brick and stone addition to its mill, 40 x 125 ft. This will enable the company to double its present output. It is hoped that the mill will be in full operation December 1.

The New England Whip Company, Westfield, Mass., has purchased the entire business of the Woodbury Whip Company, Rochester, N. Y., which is one of the largest whip companies in the country. The present plan is to maintain the business at Rochester. The company is capitalized for \$150,000.

The Mount Carmel Axle Works, Mount Carmel, Conn., has sold its property to the New Haven Water Company and will go out of business. The stock of axles and machinery is being disposed of. The business was owned by Willis Miller Cook and was established in 1833.

The A. E. Traeger Specialty Company has been incorporated at Buffalo, N. Y., with a capital stock of \$15,000, to manufacture sheet metal and wire goods specialties, cooking utensils, &c., and will commence operations as soon as factory premises are secured. August E. Traeger, 607 Ellicott square, Buffalo, is president.

Miscellaneous.

The General Fireproofing Company, Youngstown, Ohio, has received a contract to supply reinforcing materials for the new court house at New Orleans, La. It will furnish pin connected girder frames for beam and girder reinforcement and cold twisted lug bars for the floor slabs, all erected in the forms ready for the concrete. In concrete work, the position of the General Fireproofing Company corresponds with that of the designer of the structural steel building, who not only designs and fabricates but erects the skeleton steel framework. While the type of reinforcement supplied by this company is not self-sustaining, the claim being that there is no self-sustaining reinforcement, the pin connected girder frames nevertheless are joined together by mechanical means into one continuous steel frame. Every frame is bolted to the adjoining frames, and therefore continuity of the steel is effected independent of adhesion.

The Southern Watch Company, which was recently formed at Nashville, Tenn., to manufacture special watch casings and do a general refining business for the trade, has erected a four-story pressed brick building, 50 x 150 ft., which has been equipped for making all sizes of solid gold and gold filled cases. The company's factory contains employees' lunchrooms, a lounging room and reading room, and is in every way a modern plant.

Vollkommer & Hagan, furnace engineers and contractors, Empire Building, Pittsburgh, expect to complete a contract shortly for the installation of five furnaces, being the smelters, mufflies and annealing furnaces at the plant of the Pressed Steel Sanitary Mfg. Company, Detroit, Mich., manufacturer of seamless pressed steel enameled bathtubs.

J. J. Broderick, president of the Broderick & Bascom Wire Rope Company, St. Louis, which has an extensive branch at Argo, near Seattle, has arrived in Seattle, Wash., for the purpose of increasing the capacity of the plant.

The Niles Corrugating Company, Niles, Ohio, manufacturer of black and galvanized sheets, corrugated iron and steel roofing, will increase its galvanizing and corrugating departments by the erection of new buildings and the addition of new equipment, but just at this time definite plans have not been completed.

The Standard Sanitary Mfg. Company, Pittsburgh, is erecting a large addition to its plant at New Brighton, Pa. At pres

ent there are 28 furnaces in this enameling plant, and the new addition will contain 10 more.

The Lawrence Stove & Mfg. Company, Buffalo, N. Y., has incorporated with a capital stock of \$70,000 to take over the plant and business of the Lawrence Stove & Mfg. Company, which it will enlarge by the erection of a modern building, probably of concrete construction. The company is completing patterns for a new line of cast iron ranges, and in addition will make a new design of heaters, independent water heaters, range burners and other appliances. Frank L. Grady is president; L. T. Palmer, vice-president; Charles F. Grady, secretary and treasurer.

The Southern Connellsville Coke Company has let a contract for the building of 1000 new coke ovens at Cheat Haven, Pa.

The Johnstown Fuel Supply Company has been organized at Johnstown, Pa., with a capital stock of \$400,000, by interests identified with the Ohio Fuel Supply Company and the Fayette County Gas Company. A franchise has been granted the company by the city of Johnstown, and new gas lines are now being laid.

The recently incorporated Peru Chemical Gas Company, Peru, Ill., will establish an artificial gas plant at that place. James O. Cole is president; Louis B. Fulwiler, vice-president; John T. Armitage, secretary, and William H. Zimmerman, treasurer.

The new buildings which the Standard Welding Company, Cleveland, Ohio, has in course of construction include one structure, 50×425 ft., three stories high, with a three-story building of saw tooth construction, 75×425 ft., attached; annealing and inspection building, 115×130 ft., and a boiler and engine house of suitable size to provide for 1800 hp. in four units.

The Brighton Fire Brick Company, New Brighton, Pa., is making some additions to equipment by installing electrical mining machinery and power driven drills. The company will probably erect some more fire brick kilns, and reports that it has a large business on its books, making shipments of fire brick all over the country.

The Phillips Pressed Steel Pulley Company stockholders at a recent meeting in Philadelphia, Pa., authorized the issuance of stock up to \$550,000. The company was incorporated with a nominal capital of \$5000.

The Auto Car Equipment Company, Buffalo, N. Y., manufacturer of motor vehicles for general commercial purposes, has purchased 2% acres of land at Elmwood and Hertel avenues and the Erie Belt Line tracks, where it will build a new plant. The main building will be two stories high, 80 x 180 ft., with an L 80 x 80 ft., of brick, steel and glass. Other buildings will be added later.

The American Window Glass Company has decided to rebuild its plant at Bellevernon, Pa., recently destroyed by fire. Considerable new machinery will be needed for the new plant.

It is stated that plans are about completed for the building of a plant at Niles, Ohio, to manufacture patent sheet metal barrels of a new design.

A blacksmith shop is being added to the plant of the Campbell & Clute Machine Company, Cohoes, N. Y. No new machinery will be required.

The Pittsburgh Pole & Forge Company, Verona, Pa., has started work on an extension to its plant, consisting of an iron-clad building, 75 x 82 ft. When it is completed, which will be in about 30 days, new equipment, consisting of a 2500-lb. Niles-Bement steam hammer, several special forging machines, furnaces and machine shop apparatus, all contracted for, will be installed. The company manufactures steel poles and a general line of forgings for railroads. With this new capacity it will be able practically to double its output.

On an average refuse destructors in several towns of about 20,000 inhabitants in Great Britain consume annually about 4,680 tons each, and generate about 200,000 kw-hr. In each a large storage battery is necessary to care for the great fluctuations in load. In Cambuslang a combined destructor and electric lighting station destroys 72 tons a week, from which 2,520 kw-hr. is generated. Only 716 kw-hr. is generated from coal, although no battery is used. Per ton of refuse 35 kw-hr. is generated. This figure could probably be raised to 50, if batteries were used, and 40 could be depended upon for all well equipped stations. For large towns, however, the plants are failures. At Hackney, with 200,000 inhabitants, the cost of generating 1,500,000 units from refuse was \$11,000, as against \$5,900 for 1,470,000 units generated from coal. This shows almost double the cost of operation for almost identical results in generation.

Reports that the Brier Hill Coal & Iron Company, Youngstown, Ohio, will erect a new blast furnace are untrue. The company expects to rebuild its present stack, making it a little larger, and also adding some new equipment, but active work will not be started for some

Steam Gauge History.

The Boston Journal recently published a reproduction of an advertisement over 50 years old of the American Steam Gauge Company, now the American Steam Gauge & Valve Mfg. Company, 206-220 Camden street, Boston, Mass. The advertisement gave illustrations of the mechanism of the gauge, and its reproduction establishes the company's claim as being the original steam gauge company of the United States. Prior to 1850 the use of gauges in this country was limited, and the only gauge to be had was a rather crude diaphragm gauge. The Journal proceeds to say:

In 1851, at the Crystal Exposition in London, there was exhibited an improved steam gauge, patented and owned by M. Bourdon of Paris. The American rights to manufacture this gauge for one year, with the privilege of purchasing, were secured by a Boston company. At the expiration of the year the American rights were purchased by George H. Fox, who associated with him H. K. Moore, an expert machinist, and others, and from that date the success of the Bourdon tube was assured in the United States. In 1854, Mr. Fox purchased from his associates their entire interests and rights to manufacture, and organized the American Steam Gauge Company. As it was, in 1854 and until the expiration of the patent, the American Steam Gauge Company was the only company in the United States that made the Bourdon spring gauge. The demand for steam gauges was increasing, and American manufactured gauges were found to be superior to those of European make. During the past 50 years there have been many improvements in the construction of the Bourdon gauge, but the original idea is still retained in the tube.

The American Steam Gauge & Valve Mfg. Company started in 1854 with a limited production, employing a few men, and forced to hand work in producing much of its material. It has to-day nearly 500 skilled mechanics engaged in the manufacture of valves and gauges.

In the early '80's the company began to manufacture a complete line of spring loaded, pop safety, and relief valves, comprising stationary, marine, locomotive and government pop safety valves for power plants, and hydraulic, water and cylinder relief valves for general purposes. This company was the first to place on the market the American-Thompson indicator, which is now used more than any other indicator in the United States, and it has been the exclusive manufacturer of the genuine Thompson indicator in this country since its introduction in 1875. The improved pressure recording gauge is one of the company's most successful products.

The Chicago Pneumatic Tool Company's Earnings.

The Chicago Pneumatic Tool Company's report for the six months, ended June 30 last, shows a surplus available for dividends, after depreciation, sinking fund, bond interest, etc., of \$316,395, an increase of \$12,153. The increase in net earnings for the period was \$50,045. The company's total surplus is now \$1,069,229.

J. W. Duntley, president of the company, who has just returned from Europe, says: "Our domestic shipments since the first of July are a little less than in the corresponding period of last year, but the foreign business is much better. Our operating cost is less than a year ago, and our selling price lower. We will soon make another cut in the prices of some lines. It looks as though the slackening in business would run its course, but no serious recession is indicated. I found Germany in the same condition as this country, with business outstripping credit machinery. England is only in fair shape, but France seems to be sound. The Chicago Pneumatic Tool Company will continue to expand and increase its output."

The Iron and Metal Trades

The principal anxiety of producers of Iron and Steel is that of collections, and these appear to be the more unsatisfactory the closer the buyer is to the railroad interests. The financial situation is dominating the industry, yet there are surprisingly few cancellations, and deliveries of material are taken right along, and many cases of urging shipments are cited. Current consumption is still very heavy and promises to continue so for many months to come, but in those branches of the trade which have enjoyed the greatest advances there is a deadlock between buyers and sellers over prices for future delivery, and the markets are decidedly weak.

The great majority of sellers are not forcing the market, for instance, in Foundry Pig Iron, but there are a sufficient number, particularly in the territory east of the Allegheny Mountains and north of the Potomac to cause a crumbling away of prices. There is little doubt that \$19 for No. 2 Foundry at Lehigh Valley Furnace would be accepted for good sized lots to satisfactory customers. This has attracted some little buying and has brought out some fair inquiries.

Some Southern makers have reduced their asking prices to \$19 at furnace for the balance of the third quarter, and to \$18.50 for the fourth quarter, but we can not learn of any transactions of consequence.

In the Pittsburgh District there was one sale of 6000 tons of Bessemer Iron by a Steel interest whose blooming mill has broken down, thus causing the Steel plant to be idle.

A somewhat significant transaction is reported in the Steel trade. A leading interest has just bought 5000 tons of Billets abroad for importation, to be rolled into export products and thus admit of securing the drawback of 99 per cent. of the duty of \$6.72.

The Manchurian business in Steel Rails, which is much larger than is generally suspected, is not yet closed. It is understood that the Baltimore & Ohio and the Norfolk & Western railroads have reserved a large tonnage for next year, subject to specifications to be settled upon later on

The experience of one of the large Rail mills, which makes a scale of prices varying with the percentage of discard and also with the phosphorus content, is that the railroads are generally willing to pay for quality. Out of a very large tonnage placed for this year and next, only one contract is for the usual specifications. To what lengths the movement for a heavy discard may go is indicated by one inquiry for 3000 tons, received by a Rail mill this week, whose specification called for a discard of 35 per cent.

The Panama Canal Commission has placed an order for 3000 tons of 75-lb. Rails with the Maryland Steel Company, while the Panama Railroad is calling for bids on 3000 tons of 90-lb. Rails.

A moderate amount of new business has been booked by the Structural mills. For the Gary works 4000 tons has been let, while the Northern Central has ordered 2000 tons of bridge work. The Maryland Steel Company was the lowest bidder on the three piers in this city, for which 11,000 tons of Structural Steel will be required.

In the lighter lines of rolling mill products new business is not large, and the works are catching up on deliveries, so that the last of the premiums are disappearing. The advances in most of these products during the late boom have been so moderate, comparatively speaking, that no serious declines are looked for.

Lake Copper has sold during the week at 18.25c. and Electrolytic at 17.50c. The deadlock is as yet unbroken.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italies.

At date, one week, one month and one year previous.

	Lua 00		T-1-00	1 00
				Aug.29,
PIG IRON, Per Gross Ton: Foundry No. 2, Standard, Phila-	1907.	1907.	1907.	1906.
delphia		\$22.00	200 00	\$10.75
Foundry No. 2, Southern, Cincin-		φ±±.00	·\$22.00	910.10
nati	22.25	22.75	23.75	18.00
Foundry No. 2, Local, Chicago	24.50	24.50	24.50	19.50
Bessemer, Pittsburgh	22.90	22.90	22.90	19.35
Gray Forge, Pittsburgh	21.40	21.90	22.40	18.35
Lake Superior Charcoal, Chicago		27.50	27.50	19.50
BILLETS, &c., Per Gross Ton :		-1100	2000	
Bessemer Billets, Pittsburgh	20.00	20.00	20.00	00 00
Forging Billets, Pittsburgh	29.00	29.00	30.00	28,00
	33.00	33.00	34.00	34.00
Open Hearth Billets, Phila	31.50	31.50	31.75	29.50
Wire Rods, Pittsburgh	36.00	36.00	36.50	34.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28,00	28,00
OLD MATERIAL, Per Gross Ton	:			
Steel Rails, Melting, Chicago	17.00	17.00	17.25	16.00
Steel Rails, Melting, Phila	16.50	17.00	17.50	17.50
Iron Rails, Chicago	20.50	20.50	20.75	23.00
Iron Rails, Philadelphia	20.50	20.50	22.50	21.50
Car Wheels, Chicago	24.50	24.50	24.50	19.50
Car Wheels, Philadelphia		23,50	25.00	17.00
Heavy Steel Scrap, Pittsburgh	17.75	17.75	17.75	17.00
Heavy Steel Scrap, Chicago	14.75	14.75	15.50	16.00
Heavy Steel Scrap, Philadelphia	16.50	16.75	17.00	17.25
		10.10	11.00	4.1.00
FINISHED IRON AND STEEL,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	1.85	1.85	1.85	1.731/2
Common Iron Bars, Chicago	1.78	1.78	1.78	1.711/2
Common Iron Bars, Pittsburgh.	1.70	1.70	1.70	1.50
Steel Bars, Tidewater, New York	1.86	1.86	1.86	1.641/2
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.50
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.741/4
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.60
Beams, Tidewater, New York	1.86	1.86	1.86	1.841/4
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.841/4
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.85	1.85	1.90	1.571/2
Skelp, Sheared Steel, Pittsburgh.	1.95	1.95	1.90	1.60
SHEETS, NAILS AND WIRE,	1.00	1.00	1.00	1,00
Per Pound :	Cents.	Conte	Cents.	Conta
Sheets, No. 27, Pittsburgh	2.50	2.50	2.50	2.40
Wire Nails, Pittsburgh	2.00	2.00	2.00	1.85
Cut Nails, Pittsburgh	2.10	2.10	2.05	1.75
Barb Wire, Galv., Pittsburgh	2.45	2.45	2.45	2.30
METALS, Per Pound :		Cents.		Cents.
Lake Copper, New York	18.25	19.00	21.00	18.75
Electrolytic Copper, New York	17.50	18.00	20.00	18.50
Spelter, New York	5.60	5,70	5.95	6.05
Spelter, St. Louis	5.45	5.55	5.80	5.90
Lead, New York	5.10	5.10	5.15	5.85
Lead, St. Louis	4.95	5.00	- 5.00	5.75
Tin, New York	37.40	37.20	40.25	40.25
Antimony, Hallett, New York	9.00	9.00	10.50	24.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	\$4.09	\$4.09	\$4.09	\$3.94

Chicago.

FISHER BUILDING, August 26, 1907.

Both in the development of new business and the un-remitting flow of specifications Structural Material easily has the lead of other mill products. With 500,000 tons of has the lead of other mill products. With 500,000 tons of contract orders on its books, the leading fabricating interest is not in position to promise delivery of new business inside of six and a half to seven months. Smaller operators, though their engagements do not extend so far ahead, are also well supplied with work. Among the jobs involving important supplied with work. Among the jobs involving important tonnage that will probably come to closure before the first of the year is a Mississippi River bridge at St. Louis for electric traction lines, which will require about 5000 tons. The Santa Fé's purchase of 1500 tons of Rails from the Cambria Steel Company was the only transaction of the kind reported in the market for the week, though there were other inquiries that promise further sales. Improved deliveries in nearly all finished products indicate, perhaps better than anything else, that there is some decline in the volume of new business. Premium prices are gradually disappearing as mills get nearer to normal delivery service. True, in some lines, such as Galvanized Sheets, Tubular Goods and Plates, there is yet wide room for improvement, but the mills are steadily, even if slowly, gaining ground. From the way specifications keep coming in there is every assurance that there will be no marked let up in mill production this year at least. In this connection it may be noted that the books of the Illinois Steel Company show specifications on hand to the amount of 400,000 tons. against the active movement in Finished Material the stationary condition of trade in Pig Iron is in sharp contrast. Consumers are not interested even to the extent of inquiry, and a practical suspension of transactions has resulted. The Inland Steel Company has completed its new blast furnace at Indiana Harbor, work upon which was begun less than eight months ago. It will be blown in this week.

Pig Iron.—The deadlock existing between the producer and consumer has brought all transactions, save occasional sales of prompt Iron, to an absolute halt. Even the near approach of the fourth quarter has brought out no inquiries for that period, and it now looks as though whatever requirements there may be for the rest of the year will be covered by purchase from month to month, instead of for the quarter. The effect of this inaction is seen in a wavering of prices, which on Southern Iron has resulted in a decline of 50c. or more a ton. The nominal quotation for fourth quarter is now \$19.50, Birmingham, for No. 2 Foundry, but it by no means follows that this price would be maintained in the face of a good tonnage offer. There are, in fact, no transactions of this character upon which to base quotations, and the actual market level for forward deliveries is somewhat problematical. The same conditions prevail respecting first quarter business, in which there is nothing doing. No pretense is made to make open quotations for next year's delivery in the absence of inquiry. Southern spot Iron on track still commands about \$20, Birmingham, but the demand is extremely light. Because of scarcity of Silvery grades, due doubtless to an increased use of Scrap, for which they are in demand as mixers, prices are firm. Altogether, the Pig Iron situation presents an endurance test for both sides of the market. The following prices are for August and September delivery, f.o.b. Chicago:

Lake Superior Charcoal\$2	7.50 to	\$28.00
Northern Coke Foundry, No. 1 2		
Northern Coke Foundry, No. 2 2	4.50 to	25.00
Northern Coke Foundry, No. 3 2	3.50 to	24.00
	5.50 to	26.00
	25.50 to	26.00
Ohio Strong Softeners, No. 2 2	25.00 to	25,50
	24.35 to	
	23.85 to	24.35
	23.35 to	23.85
Southern Coke, No. 4 2	22.85 to	23.35
Southern Coke No. 1 Soft 2	24.85 to	25.35
Southern Coke, No. 2 Soft	24.35 to	24.85
Southern Gray Forge	0.85 to	21.35
Southern Mottled 2	0.85 to	21.35
	24.40 to	24.90
Standard Bessemer 2	24.90 to	
Jackson Co. and Kentucky Silvery, 6 % 3	31.40 to	31.90
Jackson Co. and Kentucky Silvery, 6 % 3 Jackson Co. and Kentucky Silvery, 8 % 3	32.40 to	32.90
Jackson Co. and Kentucky Silvery, 10 % 3	33.40 to	33.90

Billets and Rods.—Lack of surplus tonnage continues to limit transactions on semifinished products. A few sales of small lots of Forging Billets are reported, on which current prices were realized. These are unchanged, at \$36 to \$38. Wire Rods are subject to the same conditions, and are still held at \$36 to \$38, Pittsburgh.

Rails and Track Supplies.—Last week 1500 tons were added to the Santa Fé's Rail purchases, the order being placed with the Cambria Steel Company. This, and a small lot of traction Rails, represented the extent of activity in sales, though an inquiry for 3000 tons of Standard Sections for new construction was reported. Continued activity in the promotion of electric traction lines is evidenced by the inquiries coming into the market for material. An enterprise of this character, which contemplates the construction of a line 252 miles in length, has asked for a price on approximately 28,000 tons of Rails. Unfortunately, the question of financing such propositions necessarily precedes the purchase of equipment. Light Rails and Track Supplies continue in good demand. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 2.20c. to 2.30c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15 to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$34; 25-lb., \$35; 20-lb., \$36; 16-lb., \$37; 12-lb., \$38, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—The development of new business in Structural Shapes is seemingly more active than in any other line of mill products. Fabricators, generally, are provided with contracts sufficient to engage their capacities for from four to six months ahead. The American Bridge Company has forward contracts on its books amounting to 500,000 tons, the execution of which it will require nearly seven months to complete. No large contracts were included in the transactions of the past week, which, in the main, consisted of small jobs; the aggregate of this tonnage, however, was considerable. Bids are being opened to-day on 1550 tons of Shapes for the new Auditorium Building at Milwaukee. Plans for the construction of a bridge to be built across the Mississippi River at St. Louis by the McKinley System of electric traction lines are under way, and contracts for the substructure have been let. About 5000 tons of Steel will be required for the superstructure. This will hardly be up for figures until late in the year. Mill specifications are reported to be generously offered, the volume being fully up to the output capacity. Prices from

store are quoted without change, at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.89c.; and over, 1.89c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Aside from the fact that there is no disposition apparent among consumers to withhold specifications, there is little of special interest in the market. Mills are extremely busy on contract orders, but orders now being booked for forward delivery comprise a very moderate tonnage. We quote for future delivery as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—Deliveries on Black Sheets have so far improved that premium prices have practically disappeared. The same degree of progress has not been made in shipments of Galvanized Sheets, although the situation of extreme delinquency has been much relieved. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; Nos. 22 to 24, 2.58c.; Nos. 25.

No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c. Sheets from store: Blue Annealed, No. 10, 2.40c.; No. 12, 2.45c.; No. 14, 2.50c.; No. 16, 2.60c.; Box Annealed, Nos. 18 to 21, 2.70c.; Nos. 22 to 24, 2.75c.; No. 26, 2.80c.; No. 27, 2.85c.; No. 28, 2.95c.; No. 30, 3.35c.; Galvanized from store: Nos. 10 to 20, 3.20c. to 3.30c.; Nos. 22 to 24, 3.55c. to 3.60c.; No. 26, 3.65c. to 3.70c.; No. 27, 3.85c. to 3.95c.; No. 28, 4.15c.; No. 30, 4.65c. to 4.70c.

Bars.—New business now coming in consists mainly of

Bars.—New business now coming in consists mainly of filling in orders, and the incidental requirements of miscellaneous industries. These, however, are restricted to small lots. No wavering in the free offering of specifications is observed. A somewhat better demand for Bar Iron has developed and prices are well maintained. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.78c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—It is believed that the mills are at last beginning to make headway in the disposal of the congestion that has so long effectually blocked reasonable deliveries. The receipt of new business, however, is still large enough to prevent rapid progress. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to 1 point on the base. From store in small lots, Chicago jobbers quote 68 per cent. on Black Steel Pipe, ¾ to 6 in. About 4 points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—Inadequate shipments from mill are responsible for some scarcity in jobbers' stocks of the more salable sizes. The demand from contract boiler shops is for immediate wants and is very good. Mill quotations for future delivery on the base sizes are as follows: 2% to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in		35	35
1% to 2¼ in	50	35	35
2½ in	521/6	35	35
2% to 5 in	60	4736	4715
6 in and larger		35	

Merchant Steel.—The demand for Steel Bars and Shapes from implement makers and jobbers is fully up to the average for August. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish, up to 1½ x ½ in., 1.93c.; Iron Finish, 1½ x ½ in. and larger, 1.78c., base; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1½ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 50 and 10 per cent. off in car

lots, and 50 and 5 per cent. in less than car lots, base territory.

Cast Iron Pipe.—Requirements for the Columbus, Ohio, waterworks are readvertised for letting on August 29. In the previous specifications 2500 tons were called for, but it is likely that this tonnage will be somewhat reduced, to come within the limits of the appropriation. Trade generally is quiet, though the booking of a goodly number of small orders prevents acute dullness. We quote, per net ton. Chicago, as follows: Water Pipe, 4-in., \$38 to \$39; 6 to 12 in., \$37 to \$38; 16-in. and up, \$36 to \$37, with \$1 extra for Gas Pipe.

Coke.—The demand, which is fair for the season, is chiefly confined to prompt delivery orders. Prices are firm, and range from \$3.15 to \$3.50, at oven, for Genuine Connellsville 72-hr. Foundry Coke.

Old Material.—Although the market continues extremely weak, there have been no further recessions in prices. The demand from consuming sources is very light, and, but for the absorption of offerings by short interests among dealers, who are striving to meet delivery contracts in order to avoid furnishing grounds for cancellations, values would have undoubtedly suffered further decline. Mill yards are well stocked, and sales of rolling material are inconsequential in point of tonnage, and are only made at prices advantageous to the buyer. The outlook is not regarded as favorable for an early revival of strength. The Chicago, Burlington & Quincy is to-day offering a list amounting to 4900 tons. We quote, per gross ton, f.o.b. Chicago:

Old Iron Rails\$20.50 to \$2	1.00
Old Steel Rails, rerolling 16.75 to 1	7.25
Old Steel Rails, less than 3 ft 17.00 to 13	8.00
Relaying Rails, standard sections, sub-	
ject to inspection 28.00 to 3	0.00
Old Car Wheels 24.50 to 2	5.00
Heavy Melting Steel Scrap 14.75 to 1	5.25
Frogs, Switches and Guards, cut apart. 15.50 to 1	6.00
Mixed Steel 11.00 to 1	1.50

The following quotations are per net ton:

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	Iron Fish Plates	\$16.25 to	\$16.50 23.50	
	Iron Car Axles	20.00 to	20.50	
	No. 1 Railroad Wrought No. 2 Railroad Wrought	14.25 to 13.50 to		
	Railway Springs	14.50 to		
	Locomotive Tires, smooth	12.00 to	12.50	
	Mixed Busheling	10.50 to		
	Soft Steel Axle Turnings	10.50 to	11.00	
	Machine Shop Turnings	9.00 to		
	Mixed Borings, &c	9.00 to 9.75 to		
	No. 1 Mill	8.75 to	9.25	
	No. 1 Boilers, cut to Sheets and Rings. No. 1 Cast Scrap	10.50 to		
	Stove Plate and Light Cast Scrap	14.00 to	14.50	
	Railroad Malleable	14.75 to	15.25	
	Pipe and Flues	11.25 to	11.75	

Metals.—The uncertainties that surround movements in Copper do not invite the confidence of buyers. The same hesitation to anticipate future wants keeps up the hand to mouth buying that has been a market feature for weeks back. Slight concessions are offered, but without perceptible effect. We quote as follows: Casting Copper, 21c. to 21½c.; Lake, 21¾c. to 22c., in car lots for prompt shipment; small lots, ½c. to %c. higher; Pig Tin, car lots, 41c.; small lots, 41¾c.; Lead, Desilverized, 5.75c. to 5.85c., for 50-ton lots; Corroding, 6.40c. to 6.50c., for 50-ton lots; in car lots, 2½c. per 100 lb. higher; Spelter, 6.10c.; Cookson's Antimony, 16c., and other grades, 15c. to 15½c.; Sheet Zinc is \$7.75 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 19c.; Heavy Copper, 18c.; Copper Bottoms, 16c.; Copper Clips, 17½c.; Red Brass, 16c.; Red Brass Borings, 10c.; Light Brass, 9¾c.; Lead Pipe, 4½c.; Tea Lead, 4.15c.; Zinc, 4½c.; Pewter, No. 1, 29½c.; Tin Foil, 34c.; Block Tin Pipe, 37c.

Birmingham.

BIRMINGHAM, ALA., August 26, 1907.

Pig Iron.—The market is extremely quiet, the only sales during the week being single carload orders for immediate shipment. With the exception of a few of the larger melters, who are as yet not covered for their requirements for the balance of the year, buyers are taking little interest in the situation. It is understood that there was one inquiry for 10,000 tons and one for 2000 tons for shipment over the balance of the year received this week, but neither resulted in business. Prices are undoubtedly growing weaker, although the leading interests are maintaining former quotations and displaying no anxiety to sell. One of the smaller furnaces, which has been holding its output to sell as spot Iron for the past year, is now openly quoting \$18.50 for last quarter, and on a good sized order this might be shaded. Iron for immediate shipment and for delivery during the balance of the third quarter is being offered at \$19 to \$20 by the furnaces, and several hundred tons of resale Iron has

been quoted at slightly lower figures during the week without finding a purchaser. No inquiries for delivery during
the first quarter of 1908 are in evidence, and the price remains nominally at \$18.50. It is stated, however, that business for this delivery could in all probability be placed as
low as \$17. Cars are getting scarce, and this, together with
the fact that the furnaces are falling behind on deliveries
of the higher grades of Foundry Iron, may have the effect
of maintaining a premium, as was the case last fall. Labor
conditions are far from satisfactory, and it is more than
probable that they will be much worse in the near future.
The prohibition wave which has been spreading over the
South has struck Birmingham, and an election will soon
be had to determine whether it shall prevail in this county.
It is a well-known fact that a certain foreign element is
averse to staying in a prohibition country, and we are not
only likely to lose many of the laborers we already have,
but will be unable to induce others to locate here.

Cast Iron Pipe.—With the exception of the 5000-ton order to be let by Kansas City next week, mention of which has heretofore been made, no lettings of importance in which Southern manufacturers are interested are advertised for the near future. Business is confined almost entirely to small orders for repairs and extensions. The foundries here are very well fixed, however, so far as orders are concerned, the majority of them having sufficient to keep them going for the balance of the year. The Pipe business is perhaps affected less than any other line during dull times, and manufacturers are not displaying any undue anxiety over the final outcome. Quotations are about as follows, per net ton, f.o.b. cars foundry: 4 to 6 in., \$35; 8 to 12 in., \$33; over 12-in., average, \$31, with Gas Pipe \$1 extra per ton.

Old Material.—The Scrap market is rather quiet, there being little demand for anything except No. 1 Steel, which is moving more freely now than for some weeks. Cast Scrap is not selling to the extent that it did when spot Pig Iron was commanding a premium, but a great many melters have not as yet discontinued its use in their mixtures. Dealers' quotations are rather irregular, but are approximately as follows, per gross ton, f.o.b. cars yards here:

Old Iron Rails\$	22.00 to	\$22.50
Old Iron Axles	18.50 to	19.00
	17,00 to	17.50
Old Car Wheels	20,50 to	21.00
	18.00 to	18.50
No. 2 Railroad Wrought	13.00 to	13.50
No. 1 Country Wrought	13.50 to	14.00
No. 2 Country Wrought	12.00 to	
Wrought Pipe and Flues	13.00 to	13.50
	14.00 to	14.50
	14.50 to	15.00
No. 1 Machinery Cast	16.00 to	16.50
Stove Plate and Light Cast	12.50 to	13.00
Cast Borings	8.50 to	

Cleveland.

CLEVELAND, OHIO, August 27, 1907.

Iron Ore.—As a result of the diminished receipts of Ore, at lower lake ports, one local shipping company has notified its customers that it will have a shortage, and will be unable to deliver all that it has under contract for delivery this season. The movement of Ore in August is expected to be about the same as in August, 1906, and shippers now figure that the total shipments of the season will reach about 40,000,000 tons, or 2,000,000 tons less than the estimates made early in the season. The Ore market is quiet, and the slow movements this month and the slight shortage at some of the mines have made prices very firm. A small tonnage has been sold at an advance of 10c. a ton above the established market price. Prices are as follows at Lake Erie docks per gross ton: Old Range Bessemer, \$5. Mesaba Bessemer, \$4.75; Old Range Non-Bessemer, \$4.25; Mesaba Non-Bessemer, \$4.75; Siliceous Bessemer, \$2.75; Siliceous Non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The market remains stagpant. Sales during the week have been very few and in small lots. The only inquiries of importance have been two for about 5000 tons for prompt shipment and for last quarter delivery, the prospective purchasers wanting 2000 tons of Malleable Iron and the remainder Northern Foundry Iron. Prices show a tendency toward further weakness. The absence of inquiries for spot Iron indicates that Foundries are well supplied. There are few requests for suspension of shipments, however, and it is believed that there has been but little falling off in the amount of Iron that is being melted by the foundries in this territory. Furnaces are well up on their orders, and none of them have more than a small tonnage of Iron available for sale for spot delivery. While some furnaces quote No. 2 Northern Foundry Iron at \$22.50, at furnace, for spot delivery, others quote \$23 as the minimum price for prompt shipment. The ruling quotation for the last quarter delivery is \$22.50, at furnace, for No. 2 Foundry, although No. 2 Foundry Iron can be bought for that delivery at \$22, at furnace. There is a scarcity at present of No. 2 Scotch Iron for prompt shipment. There are no inquiries, whatever, for Foundry Iron for next year's delivery, but furnaces are making no efforts to close contracts

for next year. The Basic Iron situation is quiet, with no inquiries. Quotations for the last quarter of 1907, f.o.b. Cleveland, are as follows:

Bessemer					0	0		0	۰	0	0		0	0	0	0	0		. \$22	2.90)
Northern	Foundry,	No.	1	١.		0				0			0	a			0	0	. 23	1.00)
Northern	Foundry,	No.	2		0		0	0		0									. 22	2.50)
Northern	Foundry.	No.	3											0	0				. 22	2.00)
Gray For	00																		. 21	90)

Coke.—The demand for both Furnace and Foundry Coke continues very good, and prices are a little firmer. Although consumers are pretty well covered there are some good sized inquiries in the market. Both grades of Coke are scarce for prompt shipment. We quote Connellsville Furnace Coke for last half delivery at \$2.75 to \$3, at oven, and 72-hr. Foundry Coke at \$3.15 to \$3.50, at oven.

Finished Iron and Steel.-There has been a falling off in new business and in specifications on contracts during the week, but the lull is regarded as only temporary and the general situation is considered satisfactory. The only important new contracts were for 1500 tons of Steel Bars by a Bolt and Nut manufacturer who had not previously covered, and for 1000 tons of Structural Material and Plates for the new furnace of the Cleveland Furnace Company. The heaviest demand at present is for Structural Material, for which new orders are coming in quite freely in small lots. dications are that the Structural situation will be very sat-isfactory in this territory for some time to come. There is practically no demand for any kind of Finished Material for quick delivery at premium prices. The Plate situation continues strong and Tank Plates are still in good demand. As a result of requests to get in orders as early as possible, the agricultural implement makers are specifying quite freely for material on contracts, reporting that they are well satisfied with the situation, their advance sales indicating that their business this year will be fully as heavy as a year ago. An order for about 1500 tons of Rails for a traction line in Michigan, for which there was an inquiry in the local market, is reported to have been placed in Detroit. The demand for Steel Bars continues good and no improvement is noted in deliveries. We quote Steel Bars at 1.70c., Cleveland, for car lots for future delivery, with half extras. No change is noted in the Bar Iron situation. The demand is only fair, but local mills are getting orders as fast as can be filled and can make prompt deliveries. Local mills quote Iron Bars at 1.65c., Cleveland, but this price might be shaded for a good sized order for out of town shipment. Outside mills quote Iron Bars at 1.60c. and 1.65c., Pittsburgh. Little improvement is noted in deliveries on Galvanized Sheets. Shipments of American Bessemer Sheets are promised in six to eight weeks. We quote Beams and Channels at 1.80c., base, Cleveland, for carload lots, and Plates ¼ in. and heavier, carload lots, 1.80c. Warehouse business keeps up in a fairly satisfactory shape. We quote Steel Bars out of stock at 1.90c. to 1.95c., and Iron Bars at 1.95c. to 2c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.30c.; No. 28 One Pass Cold Rolled, 3.05c.; No. 28 Galvanized, 4.05c. Beams and Channels are quoted at 2.25c., base, out of stock. The warehouse price on Boiler Tubes, 2\% to 5 in., is 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—The market continues inactive, and prices show a tendency toward further weakness. The sales of the week were limited to a few small lots purchased by the mills to supply immediate needs. Outside of these small transactions neither the mills nor the foundries are in the market. They take no interest in the quotations made to them by the dealers and lower prices would have to be offered to tempt them to buy. Dealers expect that prices may go lower and are doing very little buying to replenish their stocks. The Nickel Plate Railroad is in the market this week with a small list of Scrap. Owing to scarcity of transactions prices are largely nominal. We quote as follows, per gross ton, f.o.b. Cleveland:

Old Steel Rails\$16.50 to \$16.	75
Old Iron Rails 22.00 to 22.	50
Steel Car Axles 21.50 to 22.	00
Old Car Wheels 23.00 to 24.	
Relaying Rails, 50 lb. and over 27.50 to 28.	
Relaying Rails, under 50 lb 30.00 to 31.	
Heavy Melting Steel 16.00 to 16.	50
Railroad Malleable 17.75 to 18.	25
Agricultural Malleable	50
Light Bundled Sheet Scrap 13.50 to 14.	00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles\$26.00 to	\$27.00
Cast Borings 10.50 to	
Iron and Steel Turnings and Drillings, 12.00 to	12.50
Steel Axle Turnings 14.00 to	15.00
No. 1 Busheling 14.50 to	15.00
No. 1 Railroad Wrought 16.00 to	16.50
No. 1 Cast 18.00 to	
Stove Plate 14.50 to	
Bundled Tin Scrap	10.00

The Pittsburgh Chain & Forge Company, which is building a plant at Padden City, W. Va., has established its general office in room S31. Frick Building, Pittsburgh.

Pittsburgh.

PARK BUILDING, August 27, 1907.

Pig Iron.-The only transaction in Pig Iron of any moment during the week was a sale of 6000 tons of Standard Bessemer Iron sold by the Bessemer Pig Iron Association to the Jones & Laughlin Steel Company for September delivery at the reported price of \$22, Valley furnace. This Iron was to have been shipped originally to a Youngstown concern, but owing to a breakdown in its Steel plant the Iron could not be used and it was resold. A sale of 1000 tons of Standard Bessemer for September delivery was made at \$22, Valley furnace. There is a very wide range in prices being quoted on Foundry Iron, and sales of Northern No. 2 for delivery in the Pittsburgh District have been made at low prices. We quote Northern No. 2 Foundry for spot delivery at \$22 to \$22.50, Valley furnace, while for forward delivery \$21, Valley furnace, equal to \$21.90, Pittsburgh, or even lower, has been done. There is practically nothing doing in Forge Iron, and we quote the market nominally at \$20.50, Valley furnace, or \$21.40, Pittsburgh. On a firm offer and for any considerable tonnage this price might be shaded.

Steel.—In a general way the market is quiet and prices are firm. The break down at the Bessemer plant of the Youngstown Sheet & Tube Company will take a good deal of Steel out of the market for the next three or four weeks, that company being a regular seller of Billets and Sheet and Tin Bars. We quote Bessemer Billets at \$29 to \$29.50, and Open Hearth at \$31, Pittsburgh. Sheet and Tin Bars are \$31, maker's mill, while Forging Billets are held at about \$33, Pittsburgh.

(By Mail.)

Extreme quietness continues to prevail in the Iron trade. In the face of a large falling off in new business, prices on all lines of Iron and Steel continue firm, with the exception of Pig Iron and Scrap, which are dull and somewhat weak. The only transaction of moment in the Pig Iron trade was a sale of 6000 tons by the Bessemer Pig Iron Association to the Jones and Laughlin Steel Company at the reported price of \$22, Valley furnace. This was originally sold to the Youngstown Sheet & Tube Company, but owing to a breakdown in that company's blooming mill, throwing the Steel plant idle, the buyer resold the Iron, as it was not needed. Reports are going of low prices on Foundry Iron, and it is hinted that close to \$21, Pittsburgh, has been done on Northern No. 2 in some special cases. The breakdown at the Steel plant of the Youngstown Sheet & Tube Company will take considerable Steel out of the market and may have the effect of making prices firmer. While all lines of Finished Iron and Steel are quiet, most of the mills are pretty comfortably fixed for the next two or three months, output and shipments at present being as heavy as at any time this year. There is no doubt that much unensiness prevails as to the future, but if a buying movement in Rails sets in, and this will have to come before long, it would, no doubt, be followed quickly by more orders for other materials, of which the railroads are large consumers.

Ferromanganese.—The market is quiet, but prices are reasonably firm. We quote 80 per cent. English Ferro for prompt delivery at ..62 and for balance of the year at about \$61, Pittsburgh.

Muck Bar.—The settlement of the puddling and Bar Iron scales means that the mills rolling Iron Bars will continue in operation, and as a result there is a little more inquiry for Muck Bar, which has been quiet for some time. We quote best grades of Bar made from all Pig Iron at about \$36.50, Pittsburgh.

Skelp.—We note an active demand for Skelp, and with the mills filled up on contracts for two or three months, the available supply for early shipment is limited and prices are firm. We quote: Grooved Steel Skelp, 1.85c. to 1.90c.; Sheared Steel Skelp, 1.95c. to 2c.; Grooved Iron Skelp, 2.15c. to 2.20c., and Sheared Iron Skelp, 2.25c. to 2.40c., depending on sizes and widths. All these prices are f.o.b. maker's mill.

Wire Rods.—The demand continues larger than the supply and the market is firm. We quote Bessemer Rods at about \$36 and Open Hearth \$37, Pittsburgh.

Rails.—The expected buying movement in Rails has not yet set in, but it is believed the demand will open up next month and that a large tonnage for 1908 delivery will be placed. It is understood that the railroads and the Rail mills are getting closer together on the question of specifications, and that an agreement satisfactory to both sides will be reached before long. Only small orders are being placed the Carnegie Steel Company having taken about 3000 tons of Standard Sections and about 2000 tons of Light Rails in the past week. We quote Light Rails as follows: \$33 to \$34 for 20 to 45 lb.; \$34 to \$35 for 16-lb., and \$35 to \$36

for 12-lb., at mill. Angle Splice Bars are held at 1.65c., and Standard Section Rails at \$28, at mill.

Plates.—The amount of new business being placed is much smaller than for some time, but the leading mills still have a heavy tonnage on their books against which specifications are coming in freely. Prices are firm and we quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c. to 1.80c., base, at mills, Pittsburgh. Extras over this price are as follows:

	ra pe
Gauges lighter than 14-in, to and including 3-16-in.	
Plates on thin edges\$0.	10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
	.05
	.10
Plates over 115 to 120 in	.15
	.25
	.50
Plates over 130 in 1.	.00
All sketches (excepting straight taper Plates vary-	
ing not more than 4 in. in width at ends, nar-	
	.10
	.20
	.10
	.20
Still Bottom Steel	.30
Marine Steel	.40
Shell Grade of Steel is abandoned	

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent, per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ½ of 1 per cent. Is allowable. Pacific Coast base, 1.69c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in, wide down to 6 in, of Tark, Ship or Bridge quality.

Structural Material.—The McClintic-Marshall Construction Company has taken about 1000 tons for a new Steel building for the Armstrong Cork Company at Lancaster, Pa. Only a fair amount of work is in sight, but the fabricators have a comfortable tonnage on their books and will likely continue active for the balance of this year at least. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c. Under the Steel Bar card, Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The limited amount of new business being placed in Black and Galvanized Sheets is in strong contrast with the heavy demand of two or three months ago, but the leading mills have a good deal of tonnage on their books, against which consumers are specifying freely, and shipments are heavy. The mills are catching up faster on deliveries of Black Sheets than they are on Galvanized, still being from two to three months behind on the latter. The American Sheet & Tin Plate Company is operating about 96 per cent. of its Sheet mill capacity and is breaking all previous records for output and shipments. Prices continue firm and we quote: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; No. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 28 gauge Painted Roofing Sheets, at \$1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, \$3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Hoops and Bands.—A moderate amount of new tonnage is being placed with the mills, but they are running mostly on specifications on contracts placed by large consumers some time ago. It is stated that there have been practically no cancellations of contracts in this trade, buyers taking out the tonnage ordered very freely. Prices are firm, but unchanged, and we quote: Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras. as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

Cotton Ties.—The trade in Cotton Ties for this year is practically over, but a few small orders are being placed at the fixed price of 0.96½c. per bundle.

Tin Plate.—Reports from the West are to the effect that this year there will be a fair crop of tomatoes and corn, but not as heavy as last year. The Tin Plate manufacturers confidently expect a buying movement from the canning interests early in September, but do not expect that contracts will be as heavy as last year. There have been reports printed of cutting in prices of Tin Plate from 10 to 25 cents per box, but these seem to be without foundation. While prices on Pig Tin are lower than they were some time ago, yet the price of Tin Bars is very firm, at \$31, maker's mill, and there does not seem to be any good reason to expect an official reduction in the price of Tin

Plate in the near future. We quote \$3.90 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Bars.—The mills rolling Iron Bars are now working on the scale calling for \$6.50 for puddling, the highest price paid for this class of labor for some time. New business in both Iron and Steel Bars has shown a material falling off, this being due to the fact that the implement makers and other consumers are covered by contracts, on which they are specifying freely. However, the leading mills rolling Steel Bars, these being Republic, Carnegie and Jones & Laughlin, are practically filled up with tonnage for the balance of this year, and outputs and shipments are still at high water mark. In fact, prompt deliveries of Steel Bars are so hard to obtain that they readily bring \$2 to \$3 a ton over the price for forward delivery. Quicker deliveries can be obtained on Iron Bars, some of the mills being able to ship in two or three weeks after receipt of order. We quote Iron Bars at 1.70c., Pittsburgh, but on a desirable tonnage some mills might shade this about \$1 a ton. We quote Steel Bars for forward delivery at 1.60c., base, half extras, f.o.b. Pittsburgh, and for prompt shipment at 1.75c. to 1.80c., Pittsburgh.

Spelter.—The market continues extremely dull, very little business being offered, and prices are weak and lower. Prime grades of Western Spelter could probably be bought at 5.50c., St. Louis, equal to 5.62½c., Pittsburgh, the lowest price this metal has touched for a long time.

Merchant Steel.—Output and shipments by the mills continue very heavy, but they are running mostly on season contracts, placed some time ago, and on which buyers are specifying freely. A fair amount of new tonnage is being placed, but it is not nearly so large as some time ago. The mills are still back on shipments to some extent, but are gradually catching up. The demand for Shafting is reported as fairly active, but official discounts are said to be sometimes shaded on desirable orders. We quote: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c., for ordinary grades, and 10c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. off in carloads, and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—There is a fair demand for Spikes from the East, with some inquiries from the West, but not much new business is being placed, the largest contract recently given out being one from the Baltimore & Ohio for 4000 kegs. We quote standard sizes at \$2 to \$2.10 and smaller sizes at \$2.25 to \$2.35 per 100 lb., f.o.b., maker's mill.

Boiler Tubes.—The demand for both Locomotive and Merchant Tubes is not nearly so strong as some time ago, but the mills are well filled up on old contracts on which buyers are specifying freely, and shipments continue heavy. It is stated that official discounts are being rigidly held as follows:

										100			-												b	roi	٦.	Steel
1 to 11/2 in.					0							٠		۰												42		47
1% to 21/4 in					0				, ,		0			٠												42	2	59
2½ in			۰				0			0	0			0					۰	0						47		61
2% to 5 in.	0		0	4		0	0					0	0	9	0	0	0		0	0						51		65
6 to 13 in.	0		. 0	0	0		0	0 1					0	0	0											42	2	59
$2\frac{1}{2}$ in. and s	m	al	116	eI	,	0	V	el	9	18	3	f	t.	ì	0	n	g	,	1	0	p	e	I,	C	el	nt.	net	extra.
2% in, and la	ar	26	3 %		03	V 6	21	9 6	25	2	۴ı	١.	1	01	nı	Œ.	-1	16	9	n	01	0	CO	ar	1 1	Y	ot o	wire

Merchant Tubes.—A moderate amount of new tonnage is being placed but not as heavy as some time ago, and the mills are now catching up on deliveries, on which they are still from two to three months behind. The Pipe trade this year will break all records for output, but the demand was also the heaviest ever known, and so crowded the mills with work that they have been unable to furnish Pipe as fast as wanted. Spang, Chalfant & Co., Inc., have taken a contract from the Kansas Portland Cement Company for seven miles of 16-in. Pipe and another contract for five miles of 16-in. Pipe, for delivery in Pennsylvania. Prices are very firm, and we are advised that official discounts are being rigidly held as follows:

												1	f	e	re	0)	40	7	10	t	1	2	1	16									
																							•						J	0	b		carloads eel.
																														1	}	lack.	Galv.
1/8	to 1/4	in														,																65	49
1/8	in											۰			٠																	67	53
1/2	in																									4	0	0				69	57
3/4	to 6	in							۰																							73	63
7	to 12	ın																														70	55
	Exter	18	ti	r _C	or	1.5	z.	T	ol	Я	i	n	6	m	rel	Is																	
1/4	Extra to %	in					9.0																									58	46
1/4	to 4	in																														65	53
41,	6 to 8	8 1	n					۰																۰								61	49
	Doub	le	e	X	tı	18	1	8	tı	re	r	18	Z.	1	ol	8	1	n	6	T	10	S	:										
16	to 8																															54	43

To the large trade all above discounts are subject to 1 point on the base and 5 per cent, on the net.

Official discounts on Iron Pipe, which are shaded one-half

point or more to the large trade, are as follows, f.o.b. Pittsburgh:

	L. H. W. W. W.	Senaine from Eque.	Black. Galv.
% to 6 in			. 67 57
% in			.00 42
7 to 12 in			62 47
		Iron Pipe, Plain B	
14 to 4 in			59 47 55 42

Coke.—Genuine Connellsville Furnace Coke is practically all under contract and is difficult to obtain. Other grades of Furnace Coke, which run next in quality to genuine Connellsville, are firm, being held at about \$2.75 a ton at oven, and we note several sales for prompt delivery involving a large tonnage at this price. Furnace Coke made outside the Connellsville region, which runs higher in sulphur, is being offered at \$2.25 to \$2.50 at oven. Best grades of Connellsville Foundry Coke continue to bring from \$3.15 to \$3.50 at oven, but other makes which do not run as high in quality are offered at \$3 and lower. The output of Coke continues enormously heavy, the Upper and Lower Connellsville regions having made last week 420,146 tons.

Scrap.—The market is showing a slight improvement in demand from the fact that a number of mills that use Iron Scrap, having arranged the puddling scale, recently came in the market and bought a limited tonnage. In a general way, however, the Scrap trade is very dull and prices are weak. Consumers of Steel Scrap are buying from hand to mouth, believing that in sympathy with other lines of Raw Material prices on Scrap will be lower. However, we may note that on account of some fairly large sales of Iron Scrap, prices on this material are a little firmer. Dealers quote about as follows: Heavy Steel Scrap, \$17.75 to \$18 for Pittsburgh, Steubenville or Sharon delivery; No. 1 Railroad Wrought Scrap, \$17.75 to \$18; Rerolling Rails, \$18.25 to \$18.50; No. 2 Wrought Iron Scrap, \$17.25 to \$17.50; No. 1 Busheling Scrap, \$17 to \$17.25; No. 2, \$13.50 to \$13.75; Bundled Sheet Scrap, \$15.50 to \$15.75; Low Phosphorus Melting Stock, \$21.50; Old Steel Rails, short pieces for Open Hearth use, \$17.75 to \$18; No. 1 Cast Scrap, \$20 to \$20.50; Cast Iron Borings, \$13.25 to \$13.50; Old Car Wheels, \$25 to \$25.50; Steel Axles, \$22.25 to \$22.50; Stove Plate, \$15.75 to \$16; Grate Bars, \$15.75 to \$16. All above prices are per gross ton f.o.b., buyer's mill, Pittsburgh, except otherwise noted. We note sales of 1000 tons of No. 1 Railroad Wrought Iron Scrap at about \$18.50; 800 tons of No. 1 Busheling Scrap at \$17; 1000 tons of Car Wheels at \$25, and 500 tons of No. 2 Busheling Scrap at \$13.75, all f.o.b. Pittsburgh.

Philadelphia.

PHILADELPHIA, PA., August 27, 1907.

It is difficult to say whether the Pig Iron market is better or worse than it was a week ago. There is more demand, but prices are considerably lower, so that one feature offsets the other, leaving it a matter of doubt whether to regard the movement favorably or otherwise. That the demand could not remain in abeyance much longer was obvious to any one. Its significance is therefore less than it would have been if there had not been such a tremendous falling off in buying as there has been during the past two or three Some business has got to be done, and as contracts months. are running out, new buying is coming to be a necessity. It does not follow, however, that it is going to be on any such scale as it has been in recent buying movements, as prices are understood to have been badly cut, in order to get things started, or it may have been to get ahead of com-Be that as it may, the action of sellers in declinpetition. ing to state the prices which they have realized is certainly not calculated to inspire confidence, on the principle that it is better to have the "devil we know than the devil we don't know." There can be no doubt, however, that some very sharp cuts have been made, and that prices are much lower than the trade had any idea that they would be at so early a date. But the buying movement is greatly restricted by the stringency in finances. There is an impression in many quarters that the scarcity of money is confined to the large corporations, while as a matter of fact it is general. Take the tie-up in New York City as an illustration. Some of the large Steel companies are hung up for enormous amounts and they in turn have to hold up payments for Scrap and other material. There are similar tie-ups on a smaller scale all the way down the line and they all tend to restrict busiand the way down the fine and they all tend to restrict business. It would not be wise to specify in detail, or to give names, but many good accounts are three to four months in arrears, which is certainly not much of a stimulus to new business. What is most needed is the liquidation of old accounts and not the creation of new obligations, and until this is accomplished there is not much chance for better business conditions. One of the largest Steel companies is authority for the statement that its overdue accounts are

50 per cent. greater than they were a year ago, and this is probably a fair average of smaller companies as well. Taking everything into account, therefore, it does not appear that the increased sales of Pig Iron during the past week are any sure indication that the market is going to do better.

Pig Iron.—Prices of Pig Iron will have to be guessed at this week, but it will be safe to guess that they are lower. Sellers are ready enough to give information when the market is going their way, but when it is on the decline they are very noncommittal. This is not a good policy, as it leads to a suspicion that things are worse than they really are. Be that as it may, a great deal of Iron has been sold during the past week on which sellers absolutely refuse to say what they got for it. Any quotation that we may mention to-day, therefore, may be subject to revision, but rumor says around \$19 for Basic and less than \$21 for No. 2 X Foundry, although we cannot vouch for these figures; but they are not beyond the bounds of probability. It is certain that Basic can be had to-day at less than \$20, and it is possible that some holders may feel like doing a good deal better to the right kind of a buyer. Nevertheless, it is hardly likely that any large tonnages will be taken, even at low figures. History is again repeating itself. On a rising market buyers never know when they have got enough, while on a decline they buy as little as possible until they reach the point of absolute exhaustion, when they have no choice and must buy. That point may be in the not distant future, but it will be on a smaller scale and hardly enough to affect prices until they have reached a firm foundation, which will probably require more time than is generally supposed. As we have already said, prices are more or less a matter of guesswork, but sales for prompt shipment have been made at the figures named below (futures particularly, Foundry and Basic being anywhere from \$1 to \$2 below the prices named), which are for deliveries in buyers' yards, eastern Pennsylvania and adjoining territory:

	X Foundry												
	Forge												
Low	Phosphorus										28.00	to	28.50

The last named is so closely sold up that buyers have had to pay extreme prices for prompt shipments.

Ferromanganese.—There is only a small business passing, at prices about the same as quoted for some time, \$60 to \$61, seaboard, for prompt shipments, and \$59.50 to \$60.50 for the fourth quarter.

Steel.—There has not been much doing during the past couple of weeks, but specifications are coming in satisfactorily, so that the mills have plenty of work for the present. Prospects are fairly encouraging, and prices are quoted at \$31.50 to \$32.50 for nearby deliveries of ordinary Rolling Steel, and \$35 to \$36 for Forging Steel.

Plates.—The mills are doing fairly well on old specifications, which are coming in pretty well. New business, however, is not plentiful, and the outgoings are considerably more than the incomings, although it is said that there is a fair amount of business in prospect. Prices are unchanged, as follows:

Tank, Bridge and Boat Steel Flange or Roiler Steel	1.95 2.20 2.40	Carload. Cents. 1.90 2.05 2.25 2.45 The following Extra per 100 lb.
3-16-in. thick		
Nos. 7 and 8, B. W. G		
No. 9, B. W. G		
Plates over 100 to 110 in		
Plates over 110 to 115 in		
Plates over 115 to 120 in		
Plates over 120 to 125 in		
Plates over 125 to 130 in		
Plates over 130 in		1.00

Structural Material.—There is little to be said in regard to this class of material. The demand is rather quiet and mostly for small and medium sized lots, on which the mills could make pretty prompt deliveries. Prices are unchanged, at 1.85c. to 2c., according to specification.

Bars.—Bars are extremely dull, and although prices are nominally 1.85c. for Best Refined Iron, it is difficult to make much headway with sales at that figure. It is intimated that a tenth better has been done in some cases, but that the quality was somewhat open to question. Steel Bars are still scarce, but they can be had at about 1.85c., Philadelphia. Prompt shipments, however, command slight premiums.

Sheets.—Business is very quiet along the entire line, but sufficient orders are on the books to keep the mills moderately well employed for the present. Prices are unchanged, as follows, for mill shipments, and a tenth higher for small lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Old Material.—The market is duller than ever, and it is almost impossible to get bids at anything near the asking prices. Steel Scrap is specially weak, and while \$16.50 to

\$17 is mentioned, it is doubtful if anything could be done at over the inside figure. At the moment there is nothing to encourage the hope of a better market in the near future. Bids and offers for deliveries in buyers' yards are about as follows, with sales of good sized lots of Steel at the inside figure:

No. 1 Steel Scrap\$16.50 to \$17.00	0
Low Phosphorus 22.00 to 22.50	0
Old Steel Axles	0
Old Iron Axles 27.50 to 28.50	
Old Iron Rails 20.50 to 21.00	
Old Car Wheels 23.00 to 23.50	
Choice No. 1 R. R. Wrought 18.00 to 18.50	
Machinery Castings 18.00 to 18.50	
Wrought Iron Pipe 14.50 to 15.0	
No. 1 Forge Fire Scrap 14.75 to 15.0	
Wrought Turnings 14.00 to 14.50	
Stove Plate 14.50 to 15.0	
Cast Borings 13.00 to 13.50	
Grate Bars 14.50 to 15.0	
No. 2 Light Sheet Steel	0

Cincinnati.

FIFTH AND MAIN STS., August 28, 1907 .- (By Telegraph).

Pig Iron.-While there appears to be no diminution in specifications on old contracts, there is a light demand for Iron, and prices have again dropped 50c. per ton. Inquiry as to conditions throughout the State, and more especially in local territory, establishes the fact that while new contracts are less in evidence than they were several months since, melters as a rule have sufficient work ahead to keep them going for a number of months to come, and as the major portion of these concerns will undoubtedly be compelled to make additional purchases of Iron to carry out these contracts it naturally resolves itself into the question whether this Iron can be bought at present prevailing prices or at a lower figure than is represented by the market to-day. At any rate the future appears to be left entirely out of the proposition, and merely enough Iron is being secured to tide over from one week to next, or until a definite basis of prices has been reached. It is reported that one of the large producers of the South has established a \$19, Birmingham, quotation for the remainder of the year, but is unwilling to designate any special month at this figure during the period named. It is safe to say, howthis figure during the period named. It is safe to say, however, that were any considerable tonnage to come forward this price could be shaded perhaps 50c. per ton. So far as next year's quotations are concerned, there has not been sufficient business to establish a price, and it is quite certain that less than \$18 could be done under favorable conditions. There is a small tonnage of resale Iron that is being offered at concessions, which in the absence of any demand appears to be largely in excess of the actual amount. One of the large melters in northern Ohio is in the market for 1000 tons for immediate delivery, equally divided between 7 and 8 per cent. Silicon and regular Foundry grades. Outside of this inquiry the business is confined to 100 and 200 ton lots and less. Freight rates from the Hanging Rock District to Cincinnati are \$1.20, and from Birmingham, We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1\$22.75	to \$23.25
Southern Coke, No. 2	to 22.75
Southern Coke, No. 3	to 22.25
Southern Coke, No. 4	to 21.50
Southern Coke, No. 1 Soft 22.75	to 23.25
Southern Coke, No. 2 Soft 22.25	to 22.75
Southern Coke, Gray Forge 19.75	to 20.25
Southern Coke, Mottled 18.75	to 19.25
Ohio Silvery, 8 per cent. Silicon 28.65	
Lake Superfor Coke, No. 1 22.65	to 23.15
Lake Superior Coke, No. 2 22.15	to 22.65
Lake Superior Coke, No. 3 21.65	to 22.15
Com Wheel Imans	

Standard Southern Car Wheels....\$29.00 to \$29.50 Lake Superior Car Wheels....\$27.50 to 28.00

Coke.—The market is perhaps slightly more active, and prices are a shade stronger. Several inquiries, calling for considerable tonnage, have come to light and the outlook is brighter than it was a week since. We quote from \$3.25 to \$3.50, f.o.b. ovens.

Finished Iron and Steel.—There is no apparent change in the situation. The market is quiet. This of course refers to new bookings during the week, as it is a well-known fact that the mills are crowded with old contracts that will run many of them far into the coming year. Prices are said to be holding firm. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 2c., with full extras. Steel Bars, carload lots, 1.75c., half extras; smaller lots from store, 1.95c., with full extras. Base Angles, carload lots, 1.85c. Beams and Channels, carload lots, 1.85c., base. Plates, ¼-in. and heavier, carload lots, 1.85c., base, and smaller lots from store, 2.60c.; No. 16, carload lots, 2.05c., and smaller lots from store, 2.60c.; No. 14, carload lots, 1.95c., and smaller lots from store, 2.50c. Steel Tire, 1 x ¼ in. or heavier, 1.95c., in carload lots.

Old Material.—In line with the Pig Iron market, the demand for Scrap is very light, and reports from dealers show trade far below the normal volume. Prices, however,

are said to be about the same. We quote dealers' prices, f.o.b. Cincinnati, as follows:

No. 1 R. R. Wrought, net ton \$16.50 to	\$17.00
Cast Borings, net ton 9.00 to	9.50
Steel Turnings, net ton	12.50
No. 1 Cast Scrap, net ton	18.00
Old Iron Axles, net ton	26.00
Old Iron Rails, gross ton 24.00 to	24.50
Old Steel Rails, long, gross ton 17.50 to	18.00
Relaying Rails, 56 lb, and up, gross ton 27.50 to	28.00
Old Car Wheels, gross ton 24.00 to	24.50
Low Phosphorus Scrap, gross ton 19.50 to	

New York.

NEW YORK, August 28, 1907.

Pig Iron.—There has been more activity in Foundry Irons, but at the expense of prices, which have receded further. There is more inquiry, both in this district and in New England, there being an inquiry for 5000 tons from the latter territory. There have been some purchases of Basic Pig by a Steel interest in eastern Pennsylvania, whose own furnaces are working badly. We quote Northern Irons, at tidewater, \$21.50 to \$22 for No. 1 Foundry, \$20 to \$20.50 for No. 2 Foundry and \$19.25 to \$19.50 for No. 2 Plain. Southern Iron is nominally \$23.25 to \$23.50 for No. 2.

Steel Rails.—Reservations for next year's rollings have been made in one or two instances, with the stipulation that specifications shall be as finally agreed upon between the committees of railroads and Steel companies. An order for 75,000 tons from the Baltimore & Ohio is on this basis, and the Norfolk & Western is understood also to have placed a tentative order. The question of discard has apparently become one of first importance with some railroad engineers. One inquiry in the past week for between 2000 and 3000 tons was accompanied by the stipulation that 35 per cent. be cut off from the top of the ingot. One Rail manufacturer reports 1600 tons booked in the past week for this year's delivery to the Denver City Tramway Company, and scattering orders amounting to 2000 tons. The Maryland Steel Company took the contract for 3000 tons of 75-lb. Rails for Panama Canal construction, let by the Isthmian Canal Commission, its bid being \$95,250. Bids have been made on 3000 tons of 90-lb. Rails, for the Panama Railroad.

Structural Material.—The mills appear to be in about the same condition as to deliveries as for the past two months, with no signs of immediate slackening. New business offered the fabricating companies is in smaller volume, however, and mill schedules must in time feel the effect of the money scarcity, which is credited with the falling off in building activity from last year's record. Recent export business closed includes 3000 tons of bridges for the Manchurian Railroad. Railroad inquiry has been rather light, and San Francisco work seems to have dried up for a time. The Pennsylvania Railroad has closed with the American Bridge Company for 2000 tons for bridges on the Northern Central Railway, and bids are in on a seven-span bridge, 1128 ft. long, for the Philadelphia & Erie, at Linden, Pa. The Erie has received bids on a new bridge over the Hackensack River, in New Jersey. Additional work at Gary, Ind., taken by the American Bridge Company, amounts to 4000 tons, and that company will receive also the contract for the new Steel Ore dock of the Duluth & Iron Range Railroad at Two Harbors, Minn., calling for 5000 tons. This is the first Steel Ore dock to be built on Lake Superior. Among building contracts pending are the proposed opera house on West End avenue, New York, between Sixty-second and Sixty-third streets, requiring 2500 tons of Steel, and a new hotel building at Washington, D. C., 1200 tons. The Maryland Steel Company was the low bidder, at \$1.543,960, on the construction work for Piers 60, 61 and 62 of the Chelsea improvement in North River, and the necessary 11,000 tons of Steel will be furnished by the Pennsylvania Steel Company. We continue to quote as follows on mill shipments, tidewater deliveries: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.90c.; Bulb Angles and Deck Beams, 2c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Sales out of stock, of material cut to length, are made at 24c. to 24c.

Bars.—Sales of Bar Iron are confined to moderate lots, on which prices are steady, on the basis of 1.60c. to 1.65c., Pittsburgh, or 1.76c. to 1.81c., tidewater, for Best Refined Steel Bars are also moving moderately, at 1.60c., Pittsburgh, or 1.76c., tidewater, for deferred deliveries, while orders for early shipment command a premium of \$2 or more per ton.

Plates.—Some little business is being done in Sheared Plates with the local shippards, mainly for repair work. The boiler shops are doing little in the way of new construction, and the demand in that direction is light. It is not expected that much contracting will be done for 60 days or more. The demand for Universal Plates is better than for Sheared Plates, as Structural fabricators are quite frequently in the market for additional supplies. Quotations are firmly held as follows, for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates; 1.96c. to

2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—Bids will be opened to-day by the city of New York for about 3000 tons of 6 to 30 in. The Bureau of Filtration, Philadelphia, will open bids September 17 for about 2400 tons of 48 in. The demand for small lots is fair, being about normal for the season. Prospects are now looking somewhat better for New York City finances, and it is now deemed likely that some of the deferred projects in waterworks extension may be taken up this year. Prices are still quoted on the basis of \$34.50 to \$35 per net ton, at tidewater, on carload lots of 6 in.

Old Material.—A little better inquiry is reported for the general line of Old Material, with practically no change in prices. Large dealers are now doing little in the market, being disposed neither to accumulate stock nor to take chances on selling for future delivery. As September approaches the feeling becomes more confident among dealers that consumers must enter the market for considerable quantities. A sale of about 2000 tons of Relaying Rails has been made at \$25 on the line of a road running into Jersey City. Railroad companies in the interior of the State are offering considerable quantities of Relayers, but are not disposed to accept bids of \$24, the best price recently offered on them. Other sales, however, are stated to have been made up to \$28.50 for New York City delivery. Quotations, per gross ton, f.o.b. New York, are as follows:

Old Girder and T-Rails for melting \$14.00 to \$14.50)
Heavy Melting Steel Scrap 14.00 to 14.00	,
Old Steel Rails, rerolling lengths 16.50 to 17.00)
Relaying Rails	i
Relaying Rails.	
Old Iton mans.	
Standard Hammered Iron Car Axles 27.50 to 28.00	
Old Steel Car Axles 19,50 to 20.00	
No. 1 Railroad Wrought	
Iron Track Scrap 15.50 to 16.00	
HUH TIMES SCIED.	
NO. I I HILL WINGER, INIS.	
Light Iron 9.00 to 9.50	
Cast Borings	
Wrought Turnings 13.00 to 13.50	į
	,
Wrought Tipe	
Stove Plate 14.50 to 15.00	
Grate Bars 13.50 to 14.00	1
Malleable Cast	
Maneable Cast	

Metal Market.

NEW YORK, August 28, 1907.

Pig Tin.—The market is very quiet, and unusually so on account of the telegraph strike. This is delaying matters greatly and hindering business to a large extent, as prices cannot be wired out in the afternoon and confirmation received the same night. There is plenty of Tin to meet the demand and a disposition is shown on the part of holders to let go of large amounts whenever possible. There has been some irregularity in the matter of price as far as spot Tin and Tin for delivery from dock are concerned. On Tuesday of this week the market advanced sharply 50 points, following an advance of £3 in London. Prices of spot Tin in New York for the week were as follows:

																						-	Ce	nt	S.—
August	21.																۰					,	36.90	to	37.00
Amornat	.3.7																						30.10	EO.	00.00
August	23.		0						٠									a	0	0			36.85	to	36.871/2
August	26.		0		0			0			0	۰	0			0		0			٠		37.00	to	37.10
August	27.			0		0	0	0	0	0		0		0		0	0	0					37.50	10	37.70
August	98																	_							37.40

The London market was firm to-day, but closed easy at £169 15s, for spot and £169 10s, for futures. Arrivals so far this month have been large, aggregating 3115 tons, and there are afloat for American ports 1432 tons.

Copper.-Again lower prices have been named on Copand several hundred tons of Electrolytic have been sent to Europe on a basis of 17.75c. Some business has been done at 17.50c. There has been a little domestic sold at done at 17.50c. this figure, and the European business indicates two things that melters in European business indicates two times, that melters in Europe are anxious to secure Copper, and what is more to the point that holders of Copper in this country are anxious to sell, else there would not be this steady daily decline. Sales of Lake have been made at 18.25c., and lower figures would be accepted to-day. It has been estimated, in a rather crude way it is true, that the accumulation of Copper now at the refineries and in the hands of the selling agents amounts to between 150,000,000 and 200,000,000 lb. Already the burden of this is growing heavy, even with concerns represented by almost unlimited capital, for money of all kinds is tight and a recent bank organized in New York City to make a specialty of loans on Copper stocks has been compelled to call its loans in that direction in order to make advances on the Copper metal. Casting Grades can be had at 17c. to 17.50c. Indications Indications are that there will be an early resumption of hand to mouth buying. There is a general belief among consumers of Copper that lower levels will be reached before the end of the year, and now that 18c. has been passed on the downward trend an early return to the 15c. level is predicted. Confirmation of the falling off of consumption comes from several different sources. A visit to an establishment where large quantities of Copper are used each year by one thoroughly familiar with the plant and accustomed to going through it brought forth the exclamation that it seemed like Sunday. The owners hastened to reassure him that they still had orders on their books, but until conditions were more satisfactory both in the money market and the Copper trade they were not going to work far ahead of orders. The condition in the London market for three days this week appears not unlike a drive at the shorts, but it must be recognized that the improved financial condition there is likely to be reflected in higher prices for speculative commodities such as Copper warrants. The London market is firm to-day, closing at £79 for spot, £77 15s, for futures and £85 for Best Select. The exports so far this month aggregate 12,081 tons, and it is believed that the imports will be heavy.

Pig Lead.—There has been no business of importance during the week, but it has been a matter of considerable comment that the leading producing interest saw fit to keep its price at 5.25c, when outside interests were cutting below it. Spot Lead in New York can be had at 5.15c, and shipments at 5.10c. In St. Louis spot can be had at 4.95c, to 4.97%c.

Spelter.—The market is easy, and sales were made in New York this afternoon at 5.60c, for spot, or on a basis of 5.45c., St. Louis. The London quotation is easier, at £21 17s. 6d.

Ferroalloys.—A sharp decline is noted in the price of 50 per cent. Ferrosilicon, future deliveries of which can be had at \$100, duty paid. Spot shipments are fairly steady at \$104 to \$105. There is a slight easing in the price of Ferromanganese and as low as \$56, Baltimore, has been quoted for futures. Spot shipments are held at \$59 to \$60, duty paid, Baltimore.

Antimony.—There is no firm price on this metal, but shipments of Cookson's for October delivery can be had at 101/2c. Hallett's could be brought into this country and laid down as low as 9c.

Tin Plate.—Business is dull and there is little inquiry. Prices, however, are unchanged, at \$3.90, f.o.b. Pittsburgh, and \$4.09, f.o.b., New York, for 100-lb. IC Coke Plates.

Old Metals.—Dealers in Old Metals are doing a hand to mouth business, but it is a noticeable fact that while prices of Ingot Metals have declined considerably during the week, Old Materials have not fallen proportionately and, in fact, Heavy Cut and Crucible Copper is now on about the same basis as new Casting Copper. Dealers' selling prices are as follows:

Copper, Heavy Cut and Crucible	Cents.
Copper, Heavy Cut and Crucible	17.25 to 17.50
Copper, Heavy and Wire	16.75 to 17.00
Copper, Light and Bottoms	15.00 to 15.50
Heavy Machinery Composition	14.50 to 15.00
Brass, Heavy	11.00 to 11.25
Brass, Light	9.00 to 9.50
Clean Brass Turnings	10.00 to 10.50
Composition Turnings	12.50 to 13.00
Lead, Heavy	4.75
Lead, Tea	4.371/6
Zine Scrap	4.621/2

Iron and Industrial Stocks.

NEW YORK, August 28, 1907.

Liquidation appears to have ceased for the present, and values of stocks have been quite well maintained during the past week. Transactions have not been large, this having been the case with railroad stocks as well as with industrials. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 29½ to 31½, preferred 92½ to 93¾; Car & Foundry common 36½ to 38; Locomotive common 50¼ to 52½; Steel Foundries preferred 30 to 31; Colorado Fuel 22 to 24; Pressed Steel common 26¾ to 28, preferred 82 to 86; Railway Spring common 34½ to 28, preferred 82 to 86; Railway Spring common 34½ to 71½; Sloss-Sheffield common 44½ to 47½; Cast Iron Pipe common 27¾ to 28½; Can preferred 44 to 46. Among the noteworthy occurrences of the week was the sale of Bethlehem Steel preferred on Tuesday at 30, which is the lowest price so far recorded, and was reached on the sale of only 100 shares. Last transactions up to 1.30 p. m. to-day are reported at the following prices: United States Steel common 31½, preferred 94; Car & Foundry common 38¼, preferred 94½; Locomotive common 51¾, preferred 100; Steel Foundries common 27½, preferred 83; Railway Spring common 36; Republic common 20, preferred 71½; Sloss-Sheffield common 45%; Tennessee Coal 135: Cast Iron Pipe common 28½, preferred 77; Can common 4½, preferred 46.

Dividends.—The Alabama Consolidated Coal & Iron Company has declared the regular quarterly dividend of 1% per cent. on the preferred stock, payable September 16.

The Railway Steel Spring Company has declared the reg-

ular quarterly dividend of 1% per cent. on the preferred

stock, payable September 20.

The Asbestolith Mfg. Company has declared a dividend of 2½ per cent. on the capital stock, payable October 1.

Solid Steel Wheels for Passenger Cars.*

BY GEORGE L. FOWLER.

Investigations have been carried on for two years under the patronage of a manufacturer of solid steel wheels, to determine whether such wheels can be made that will be safe and reliable for ordinary passenger service. Samples were taken of steel tires that were in first-class condition, also of steel tires that had failed. Test pieces were taken for comparison with solid steel wheels as to chemical analysis and physical properties. In tensile strength the tires showed very little difference. The lowest carbon was 0.57 per cent.; the highest, 0.716. The maxima of tensile strength of the various steel tested ran from 113,000 to 124,000 lb. per sq. in. Elongations varied practically with the carbon, running from 6.89 per cent. up to 29.5 per cent.. this last being naturally with the steel tire having the least percentage of car-The elastic limit of the various steels ranged from 72.63 per cent. of the ultimate strength up to 86 per cent. The solid steel wheel was found to have the highest percentage of elasticity in relation to ultimate strength. The hardness tests which were made on the Martel scale showed very little difference, running from a minimum of 783 to 1125 degrees. The maximum of hardness was obtained in the case of a solid steel wheel.

The test showed in general that as far as purely laboratory tests go the metal that is put in the solid steel wheels, rolled or forged, can be entirely depended upon for safety. Records have been taken of steel wheels that have made a total of 25,618 miles per 1-16 in. wear and with a total mileage of 154,700 to 184,000 before first turning, the wheels being still in good condition. These wheels are also used very extensively for street railroad service, where elements enter into their use which are not a factor in steam railroads-that is, the rapid wear of the ordinary wheel and the value of the car in saving or preventing it from going into the shop for wheel renewal. There, because of brake action, the condition of the rail, and other things, the wear of these wheels per 1-16 in. drops very much below what is found on the ordinary steam road. It runs from 7000 to 9000 miles per 1-16 in. wear.

Slag in the Steel.

As to the cause of shelling out, there are a great many theories. Some claim that there is a cleavage along the ferrite lines in the wheels-i. e., that there is a shortness in the metal that causes it to grow in cold weather, but it is a curious fact that of all the shelled out steel wheels examined, slag was the cause of shelling out in every instance. In all of these wheels, both new and old, sections were taken and microphotographs made, some 500 in all. In every case where the wheels have shelled out the wheel was simply impregnated with slag everywhere.

There is no doubt that the cast blank can be made so that it will be perfectly safe for ordinary purposes, but in casting the blank there is always more or less slag carfrom the surface of the mold into the tread of the wheel, which makes it very liable to shell out when it is put in service, and this occurs also in those tires where the ingot is not properly cropped and properly trimmed before it is rolled into the tire. Quite a number of tires had evidence of slag from the surface of the ingot, from being improperly taken care of at the mills. That is practically the trouble that we had with the cast blank. I make a distinction between a cast blank wheel where the wheel is cast approximately into the form of a wheel and then given some surface rolling, and one where a slice is simply cut off the ingot, cut and rolled, and the whole shape of the wheel changed.

By examining those wheels with the microscope we find that the penetration of the rolling into the solid

Condensed from a contribution to the topical discussions he Atlantic City convention of the Master Car Builders' Association.

steel wheel is about the same and is very similar to the penetration due to the rolling that we find in the ordinary steel tire. You can see surface indications and you practically can count the number of heatings that have been obtained with the wheel, and see how it has worked down into the center of the wheel by a careful examination with the microscope. In this connection I want to say that upon defective metal, or the metal upon which any doubt is brought to notice, there is nothing in the world that will show things out so clearly as the microscope. I had a case of a large drawbar which had broken between the engine and the tender. It was a most beautiful fracture; there was absolutely nothing that you could see with the eye to show why that should break. But when It was etched and looked at under the microscope the story was as plain as day. It was simply full of slag. and there was very little metal in it. This cause of shelling out is all that I have been able to find, that is the slag, and I do not know how much further it will go.

Steel and Cast Iron Wheels,

In regard to the relative values of steel and cast-iron wheels for all services, I have had some very peculiar results. I do not feel like saying that they are absolutely sure, but they certainly are peculiar indications. I took a pencil from a cast-iron wheel, just as though I had bored down into the tread with a hollow bit, and I had a piece about as long as my finger and a half inch in diameter, which I put on an emery wheel and loaded with a fixed weight, and measured the number of revolutions to grind off each 1/8 in. I did that with all my steel tires To my intense surprise, I found that my cast iron ground off about four times as rapidly, even in the hardest part of the chill, as any of the steel tires or wheels. though I got the apparatus for the purpose of grinding steel. I went to the manufacturers, the carborundum people, told them what I wanted to do, but said nothing at all about cast iron. They gave me a wheel from which they said I would obtain the best results, and the most satisfactory data for the purpose. I used it, and it was not until afterward that I put the cast iron pieces on. After I had obtained these results, another manufacturer of emery wheels told me I was entirely wrong in my conclusions, because a wheel that was adapted to grinding off steel would not grind cast iron with equal efficiency. In other words, it was not adapted to grinding cast iron; and yet this wheel that was not adapted to grinding cast iron did grind it four times as rapidly under identically the same condition as it did the steel wheel. I then put a cast iron wheel and a steel wheel in the testing machine, and skidded them, weighing the load and weighing the pull required to slip it, and my previous experiments with the metal pencils were simply checked; that is, every spot that I got on my cast iron wheel accounted for almost exactly four times as much metal as I removed from the steel wheel under the same conditions. That was further checked by the fact that on a certain railroad we found it took about four times as long to grind off steel as cast iron wheels.

To take the thing still further I put a steel and cast iron wheel on the same axle with a load of 24,000 lb.. and put a brakeshoe upon each side of the wheel so as to be able to skid it under any conditions. I then pulled it over a piece of track about 1800 ft. long that was in thoroughly good surface and alignment, and then I did the work at a speed of from 21/2 to 3 miles an hour. found that the metal removed, as accounted for by the flat spot, was about four times as much for the cast iron wheel as for the steel wheel. But when I increased this speed to from 16 to 17 or 18 miles an hour, I exactly reversed the conditions. The heat that was developed by the high speed simply reversed the wearing qualities, as far as skidding was concerned, of the cast iron and the steel wheel. But inasmuch as almost all skidding is done at comparatively low speed and comparatively short distances, the fact is that the cast iron wheel does flatten more rapidly under those conditions than the steel wheel. This accounts for the almost universal experience that flattening is more common with east iron than with steel wheels, because the work was done while the metal is

The Machinery Trade.

NEW YORK, August 28, 1907.

Among machinery houses in this section no alarm is felt over the present decrease in the demand for machinery, as all indications point to an early resumption of activity. While it is true that during the past few weeks a midsummer lull prevailed, the week just closed has shown some improvement, especially in the amount of orders received. The buying of acCanadian car company materially aided in swelling the amount of business transacted. Inquiries have not been very numerous and no large lists were reported. The railroads have displayed but little activity, though it is said that one or two of the larger lines are preparing to come into the market shortly for considerable equipment. Among these is the Baltimore & Ohio Railroad, which is understood to be getting ready to make purchases against the large list of machine tools it sent out for bids some months ago. According to dealers here, deliveries are not materially improved.

There seems to be a good scattering demand for machine tools from manufacturers of agricultural implements, and indications are that the trade from that source will continue brisk for some time, as it is understood that many manufacturers of farming implements are making plans for material extensions. Most of these people have been unwilling to pay the high prices that prevailed in the trade the last few months, and they have probably been waiting for better terms or at least a falling off in the demand for equipment. The inquiries before the trade do not indicate any large lists. As it is generally the policy of this class of manufacturers to make their purchases piecemeal, their buying will probably extend over a considerable period.

The supply of second-hand machine tools seems to be somewhat better just now than during the previous three or four months, and consequently dealers who carry that class of equipment are doing considerable business. There has been a good demand for second-hand equipment right along, and most dealers were bewailing the fact that they could not supply it. The better supply has given them an opportunity of turning over some good profits.

Judging from the way applications are coming in to the Membership Committee of the Machinery Club, the success of the organization is assured. Nearly 400 applicants have sent in checks covering their initiation fee, and a large number of them are men prominent in the trade. The Cincinnati machine tool manufacturers are largely represented, and there is a good number of applications in from Pittsburgh. There are three from San Francisco, and even Cuba and the City of Mexico are represented by members. The New York contingent is in the large majority, and the trade here is giving excellent support to the movement. Before long a meeting will be called, and those whose applications are in will be listed as organized members.

Norfolk & Western Railroad's New Shops.

The Norfolk & Western Railroad has purchased about 75 acres of land adjoining its shops at Portsmouth, Ohio, and the property will be used for both yard and shop extensions. The company has a fair sized system of shops at that point now, and it is understood that the capacity of the plant will be trebled, and at the company's New York office, 40 Exchange place, it is said that the plant when completed will be about as large as the system of shops now in course of construction at Roanoke, Va. The Roanoke shops include a foundry, 140 x 740 ft.; cab shop, 75 x 200 ft., and a machine shop, boiler shop and other departments of a comparatively large size. The company has spent a large amount of money of late on the Roanoke shops, and an equally large expenditure can be looked for for the Portsmouth shops.

The Pittsburg & Lake Erie Railroad, a subsidiary of the New York Central, has bought a large tract of land at Pollock Station, above Glassport, Pa., at a cost of \$40,000, on which it expects to build a large system of repair shops. The plans include, besides some large roundhouses, an extensive machine shop, and it is understood that the company contemplates construction operations there costing nearly \$1,000,000. None of the machinery equipment has been purchased yet, and the engineering department is now working on preliminary plans.

ing on preliminary plans.

The New York Central Railroad has given the Niles-Bement-Pond Company, New York, a contract for a 100-ton

crane, for delivery at the Depew shops. This is one of the largest cranes ordered in this vicinity for some time.

Important Purchases by Dominion Steel Car Company.

A number of New York machinery men visited Montreal, Canada, last week to confer with the engineers of the Dominion Steel Car Company of Canada on a supplementary list of machinery equipment the company is now buying in order to complete the equipment of its new plant. The indications are that a large part of the business will come to this country, as the company has in the past favored American machinery equipment. The Dominion Steel Car Company's plant, which is about completed, is at Montreal, West, and the company has offices in Montreal and is closely connected with the Simplex Railway Appliance Company of Canada and 42 Broadway. The car company's plant is being equipped to manufacture both steel and wooden cars, and the main building is 150×600 ft. It will be remembered that a number of large orders for machinery were placed in the trade by this company several months ago, but it is understood that the supplementary list, of which orders are now being closed, is an extensive one, and at least one big Liberty street machine tool house is negotiating with the company, while a number of New York representatives of machinery manufacturers are in touch with the company's engineers.

The Oaks Mfg. Company, New Berne, N. C., manufacturer of agricultural machinery, has begun the construction of a new building, which will be equipped with modern machinery. The building will be of brick and will have a side track from the Norfolk & Southern Railroad, which will furnish excellent shipping facilities. The plant will be electrically operated. The equipment has not yet been purchased, and the company contemplates buying the following machinery: One 36-in. band saw, one No. 1 saw table, one 24-in. double surfacer or pony planer, one 18-in. wood turning lathe, one post boring machine, one power hack saw, one two-spindle drill, one 12½-in. shaper, one 18 in. by 8 ft. lathe, one 1½-in. bench grinder, one 200-lb. anvil, one No. 65 blacksmiths' vise, one No. 3 vise, one No. 53 bulldog vise, one neck yoke and singletree lathe, one 12-in. jointer, one blower, one punch and shears, $\frac{5}{8}$ x $\frac{5}{8}$ in. punch, 3 x $\frac{5}{8}$ in. shears; one 31-in. radial drill.

The Acme Road Machinery Company, Frankfort, N. Y., has let contract for the erection of its new machine and blacksmith shop, 74 x 306 ft., which will have an L 40 x 50 ft. to be used for stockroom and superintendent's office. In the rear of the machine shop a concrete foundry, 60 x 90 ft., is being erected, and at the opposite end of the former building from the foundry will be a new woodworking shop, 50 x 100 ft. Plans are being prepared for a new office building. A storage warehouse, 20 x 250 ft., has been completed.

The Imperial Machine Company, 118-122 Market street, Newark, N. J., is having plans prepared for a new plant to manufacture the Victoria vegetable machine. The company will build a machine shop and foundry, but the exact size of the structures has not been determined upon as yet. The company is at present manufacturing in Newark, but the plant is not adequate to take care of the demands made upon it. It is probable later on the company will come into the market for machine shop and foundry equipment.

The trade will no doubt shortly hear of machinery requirements for a large power project advanced by the Juneau Water, Light & Power Company, 42 Broadway, New York, which was recently organized with a capital stock of \$4,000,000. The company is not ready to announce its plans as yet, but it is understood that it will build a hydro-electric plant to develop about 4000 hp. The location of the plant has not been announced, but there are some machinery men who have knowledge of the project in a general way, and they state that very shortly the company's requirements will be presented to the trade. The incorporators are E. W. Waybright, 42 Broadway; J. Herbert Miller and I. M. Harvey. Mr. Waybright is out of town at present, but it is said that in about 10 days the plans of the company will be made public.

The MacArthur Brothers Company and Winston & Co., New York, which put in a joint bid, have received the contract, known as contract No. 3, for the Ashokan reservoir work, by the Board of Water Supply, New York. The estimated cost of the work is \$12.800,000, and the two firms agreed to do the work for \$12.669,775.

The Ridgway Dynamo & Engine Company has through

The Ridgway Dynamo & Engine Company has through its New York agents, McClave-Rimmer & Co., 90 West street, received the following contracts: One 250-hp. engine and generator for the Lehigh Valley coal docks, Milwaukee, Wis.; two 100-hp. engines for the Grand View Sanitarium, Wernersville, Pa., and one 100-hp. engine for the Manhattan Shirt Company, Passaic, N. J.

Business Changes.

The Robins Conveying Belt Company, New York, is receiving bids for the erection of an addition to its plant at Passaic, N. J., which is expected to be completed in the fall, when the offices of the company will be moved from New York to the new building. The structure will be 40 x 70 ft., two stories.

Chicago Machinery Market.

CHICAGO, ILL., August 27, 1907.

The quieter movement now seen in machinery as well as in many other allied lines of the iron and steel industry is in accordance with, rather than contrary to, general expectation. This refers chiefly to the development of new business, since so far as manufacturers are concerned there is business enough already booked to assure activity through the remainder of the year. Orders for machine tools continue to represent pick up requirements, but they are sufficient in number and importance to swell the total of sales for August to figures that are well above the general average for the corresponding period of previous years. A fuller supply of new tools in the hands of dealers has resulted in a sharp decline in demand for second-hand machines. Only the better class of such equipment possesses attraction for buyers now, and the extravagant prices that ruled earlier in the year have entirely disappeared. Purchasers who seek additional tools of certain makes are still confronted with the necessity of prolonged delay of deliveries. If, however, it be a question of securing reputable machines without absolute regard to brands no serious difficulty is encountered in this respect. This fact alone reflects an improved condition that should a little later prove effective in inducing buyers to enter the market. Enterprises in the extreme West seem to be advancing with unabated vigor. These, in some districts, find expression in a demand for irrigation and hydraulic power equipment. Promotions of this character, formerly dependent in a large degree upon Eastern capital, are now quite frequently financed locally by private subscription or bond sales. The continued activity of mining interests is also responsible for a well sustained demand for the various sorts of equipment used in this work. the general manufacturing trade, however, orders for heavy machinery are not so plentiful. Especially is this true of machinery are not so plentiful. Especially is this true of motive power equipment, where, while for small steam and combustion engines the movement is fairly good, for units of large size the call is limited. Slight reductions from the unusually large working forces engaged in these departments have taken place in some large plants. This action has perhaps no special significance except so far as it re-flects decreased activity in the larger undertakings that are This action now under leash of a more or less pronounced financial stringency. Reports of slow collections are now pretty general; a condition doubtless due in large measure to the drain upon funds imposed by crop moving requirements.

Tool purchases by the railroads are still being vigorously restricted to imperative needs, which in the main consist of a few machines required here and there to piece out equipment in various shops. There are, however, some lists of considerable importance in course of preparation, which, it is expected, will come into the market in the near future. Chief among these are the requirements of the 'Frisco System, which embrace the equipment needed to supply new shops now in course of construction at Springfield, Mo. Specifications have been completed and are now in the hands of the superintendent of motove power for revision and

Plans are now being prepared for the extensions to the present shops of the Great Northern Railway Company at Superior, Wis. The extent of the new work contemplated and the additional machinery equipment required cannot be stated at this time, since the plans in hand are not suffi-

ciently developed.

Prominent among the industrial improvements that mark the present rapid course of progress in the Northwest announcement of plant construction plans of the Columbia Steel Company, Incorporated, Portland, Ore. This company, formerly known as the Columbia Engineering Works, has recently purchased a 188-acre tract on the Willamette River, near Linton, where it will soon begin the construction of five principal buildings. These include a foundry, 116 x 250 five principal buildings. These include a foundry, 116 x 250 ft.; machine shop, 60 x 100 ft.; pattern storage building of two stories, 100 x 150 ft.; pattern shop, 50 x 80 ft., to which will be added other buildings of minor importance. With a water frontage of 900 ft. ample dockage facilities will be provided, to which will be added railroad connection through to spur tracks to the Northern Pacific Railroad. The estimated expenditure for plant construction is \$80,000, and the outlay for machinery equipment will be fully as much more. It is expected that complete specification of It is expected that complete specification of these requirements will soon be prepared and submitted to the trade. If present intentions are realized the new plant will be ready for occupancy by February.

The extended utilization of pressed steel shapes, designed to supplant the use of cast iron and wood in various forms of construction, is responsible for the rapid expansion noted in this important industry. A late addition to Western in this important industry. A late addition to Western enterprises of this character is the Heggie-Woodruff Pressed

Steel Company, Joliet, Ill., recently incorporated with a capital stock of \$5000. Its officers are James G. Heggie, president; J. J. Gaskill, vice-president; C. A. Russell, secretary; C. E. Woodruff, treasurer. Ground has been broken for a new plant, to be erected on a site adjoining the new rolling mill now being built by the Joliet Iron Products Company. The principal building, which is of steel construction, will be 50 x 140 ft.; other buildings will be added as the work progresses. Machinery already pur-chased includes a 450-ton four-column hydraulic press, with pumps and accumulator, built by R. D. Wood & Oos, and a 60-in. 250-ton sectional flanging machine, all of which were furnished by Jos. T. Ryerson & Son, Chicago. A 5-ton traveling crane will also form part of the shop's equipment. The principal product of the plant at the outset will be a patent pressed steel car door, heavy flanging of boiler heads and other shapes, while later the manufacture of steel bathwill be undertaken.

The Joseph Iron Company, Aurora, Ill., successors to the Israel Joseph Iron Company and J. Joseph & Co., in scrap iron, metals and paper stock, has yard plant improvements under way that include the construction of a new cement and brick warehouse and office building. When completed this building will require a hoisting elevator, and

the company will also increase its machinery equipment by the purchase of another heavy scrap shear. The Smith & Post Company, Milwaukee, manufacturer of stone crushing machinery, is building an 80-ft. addition to its plant on Locust street. The addition will be one story high, with a lantern roof and of brick and iron construc-

, with concrete foundation and floors. The Gemmer Engine Company, formerly located at Wabash. Ind., has been removed to Detroit, Mich., where it is reorganized under the name of the Gemmer Mfg. Company, with a capital of \$100,000. The company manufactures

gears and transmission machinery.

The Wisconsin Engine Company, Corliss, Wis., is now building four 1500-hp. horizontal cross compound condensing heavy duty Corliss engines, which will supply all the electric power for the new plant of the Jones & Laughlin Steel Company, Aliquippa, Pa. A 900-kw. generator is also being constructed for the National Tube Company, and will be installed at its Wheeling works.

Thomas B. Jeffery, automobile manufacturer, Kenosha, Wis., has authorized the Board of Education of that city to equip a new manual training high school with all the necessary tools and machinery at his expense. The new department will be open the first week in September. Mr. Jeffery has made former valuable gifts to the schools of Kenosha.

Philadelphia Machinery Market.

PHILADELPHIA, PA., August 27, 1907.

Transactions in the local machinery market continue about on an even basis, total sales for the past week averaging about the same as the week previous. Generally speaking, the market is rather inactive, the August vacation period frequently interrupting what new business there is before the trade. The closing of a few small lots of tools, which has been under consideration for some months, helped to bring the average business of several concerns up to a fair volume. The greater proportion of the business placed, however, was confined to single tool propositions. Some little business developed from one of the local railroads, although but a small fraction of the tools specified some months ago was taken, being required, it is understood, for replacement in one of the local shops.

The demand for milling machines is probably the most The demand for milling machines is probably the most active, and on these tools as a rule the most extended deliveries are being named. Lathes and planers are being inquired for pretty freely. The general run of business, however, is largely along a miscellaneous line and mostly for tools of the medium and smaller sizes. Here and there sales have been made of the heavier equipment, but the number is not large in comparison with the general average of the past few weeks.

past few weeks.

Inquiries are somewhat irregular. On some days quite a heavy demand is to be noted, while on others the market is The inquiries received are mainly conpractically bare. fined to propositions of the smaller size. There is nothing of any moment from the railroads, and specifications covering any extensive equipment in this vicinity are very scarce.

Manufacturers keep busy, however, and are not con-cerning themselves a great deal about new business, inas-much as almost every tool builder has orders enough on hand to keep actively engaged for months, and while at the time orders are not being received in anything like the proportion that deliveries are being made, manufacturers believe that a resumption of the buying movement will set in long before their present orders are exhausted. The volume of business may not be as great as it was last fall, but builders of machine tools have been so extremely busy during the past year or so that a good healthy demand with-

out the rush features would be satisfactory to them in almost every case.

The foreign demand continues principally along the line of special tools and power transmission specialties. any, business has been done in the standard line of machine

The second-hand machinery trade continues only fairly There has been a little more demand for some classe of tools, but on the whole the market has not been up to the average, even at this season of the year. Sales of second-hand boilers and engines have been somewhat better, although this branch of the trade can stand material improvement

Both iron and steel castings of some classes are in better delivery. Foundries are after business for future de-livery more actively, although some plants are pretty well booked up for anything like reasonable delivery.

Frank C. Roberts & Co., engineers, have prepared plans for a large addition to the plant of the Taylor Iron & Steel Company, High Bridge, N. J. These include a shop 100 x 114 ft., a machine shop 72 x 168 ft., and a molding building, 24 x 365 ft. All these buildings are of structural steel and brick. The steelwork has already been placed with the McClintic-Marshall Construction Company, Pottstown, Pa., while bids on the brickwork will be received by the engineers until September 3. Details regarding the equipment of the new shops are not yet available.

Director Stearns of the Department of Public Works,

Philadelphia, has awarded the contract for the construction of the preliminary filters at the Torresdale Pumping Station, previous mention of which has been made in these columns, to the Millard Construction Company, the award being made on a bid of \$1,546,410. Seventy-eight items were bid upon. Work on this plant was held up some time ago, and it is stated that a large proportion of the machinery on the plant has deteriorated so much that about 80 per cent, will have to be replaced.

H. B. Underwood & Co. report orders fairly good on all lines and note little diminution in the volume of business being taken. There is a good demand for portable shop repair tools, particularly boring bars, and deliveries during the past month have been exceptionally heavy. Little busi-ness, however, is coming from the railroads, orders being confined to industrial plants and shops. A large lathe bar was exported recently to Germany, while a standard portable boring bar was shipped to Italy. A quantity of portable

boring bar was shipped to Italy. A quantity of portable tools and machinery was also recently shipped to Colon, Panama, for service in the Isthmian canal work.

Seymour Davis & Paul A. Davis, architects, have prepared plans and specifications for shops, laundries, boiler house and stack for the Thaddeus Stevens School, at Lancaster, Pa. Bids on this work will be received until September 15. Plans and data regarding the equipment, it is understood, can be obtained from C. J. Landis, president, Lancaster, Pa.

Ballenger & Perrot, architects and engineers, it is stated, have let the contract for the erection of additional buildings for the Victor Talking Machine Company, Camden, N. J. to the J. S. Rogers Company. These buildings will be largely used for manufacturing purposes and will be modern in

The Department of Public Works, Philadelphia, Pa. will receive bids for bridges, sewers and inlets under sched-ules A, B and E until September 11. The bridges referred to under schedule A include those over Belmont, Girard and Columbia avenues, over the Pennsylvania Railroad, as well as the Boulevard bridges over the Philadelphia, Newtown & New York Railroad, and over Tacony Creek and Ashdale street. Specifications may be obtained from the director of

the department, George R. Stearns, room 412, City Hall. The Birdsboro Steel Foundry & Machine Company, Birds boro, Pa., has installed a department for machining high pressure steel fittings. The equipment for this includes a tri-facing machine, multiple spindle drill presses and necessary testing apparatus. A new power plant for general purposes is also being installed and is expected to be completed within the next month. Business continues fairly active with this company, although inquiries are not as plentiful as some time since.

Cincinnati Machinery Market.

CINCINNATI, OHIO, August 27, 1907.

As the vacation season wanes evidences of increased activity in all departments of the machine tool industry are apparent. Manufacturers of the larger tools, such as milling machines, planers, shapers and the heavy types of radial drill presses, are still behind with orders, and as inquiries from dealers and direct buyers are not largely in evidence, they hope to catch up on deliveries by the first of the year. A recently returned manager of a downtown sales headquarters for steam pumps and kindred lines reports the strongest kind of activity in all lines of machinery through the South and Southeast. This gentleman reports prices firm, no threatening labor troubles in sight, and furnaces busy to their utmost capacity filling advance orders. The local concern which constitutes a part of the great organization controlling the steam pump industry represented by this gentleman has been working a night shift constantly ever since the big strike of 1902; practically the same conditions exist in this line of industry in the other sections.

The first of the month will see the return of many heads of large manufacturing companies from their vacations, quite a large number of whom have spent the greater part of the summer abroad. Two who are due early in the month in their correspondence respecting foreign customs and conditions note a verification of the well-known fact that American hospitality and freedom from international prejudices are exceptional and not the universal custom. The travelers wrote that American machinery manufacturers were not permitted to inspect foreign shops. The letter in question was written in Stockholm, Sweden. It has been a custom for many years in Cincinnati tool manufacturing districts to take visitors from abroad on the most thorough and pains-taking trips through their establishments.

An index of conditions in the market for finished products is furnished in the extreme activity of local foundries. With some 15 large foundries on this side of the river and five on the Kentucky side, there still remains from 40 to 50 per cent. of castings to be made and shipped here from points from 20 to 350 miles distant. Reports from the Southern furnaces seem to indicate that there is little diminution of activity in the manufacturing lines apparent. That the field is dependent on more than foundry features is shown in the practice of some concerns, endeavoring to facilitate early deliveries, which send certain important parts of machinery to Dayton and other points for finishing. One foundry which makes large castings for a number of the largest concerns here reports for the current month the largest business in its history. Foreign orders are being shipped constantly, but new orders are as yet comparatively from this source. Deliveries are gradually assuming a normal stage.

A new industry that promises to become a factor in the A new industry that promises to become a factor in the local field is the Tool Steel Motor Gear & Pinion Company, just incorporated at Columbus by C. E. Sawtelle, D. L. Carpenter, H. Lee Early, L. B. Daniel, D. P. Hopkins and Malcolm McAvoy. The company will manufacture gears and pinions principally for street car service. A building has been purchased in Carthage, a Cincinnati suburb, 80 x 100 on Cook avenue, and in this machinery will be installed and operations commenced at the earliest possible moment.

Among the sufferers through the big fire of the week which devastated a large manufacturing district at Hunt street and Reading road was the D. T. Williams Valve Company, one of the city's comparatively new institutions. The officials are not ready to give a conservative estimate of their losses as yet, but expect to be ready for business as usual in about 10 days. A large part of the business was contained in the old quarters on Sycamore street, and in the resumption of activities at the temporary number, 410 East Eighth street, the company expects to be but slightly inconvenienced street, the company expects to be but slightly inconvenienced in filling orders. Fortunately, the fire which completely consumed the building on Hunt street, recently acquired, destroyed only the machinery for the manufacture of grease and oil cups, and orders to replace these machines, mostly brass lathes, have already been placed and are booked for early delivery. The company reports business excellent.

To rebuild the fire swept section will enlist the participa-tion of manufacturers of boilers and engines, refining and smelting machinery and high grade woodworking, machinery The Edna Refining & Smelting Company, Morrison & Snod-grass Company and Eagle White Lead Company, whose plants were burned, will rebuild on their old locations.

It is reported from New Albany, Ind., that the plant of the Ohio Falls Iron Company, employing over 500 persons, which was shut down for a week pending settlement of some wage questions and to permit of needed repairs, has resumed

operations.

I. N. Wade & Son, Ironton, Ohio, are in the hands of W. H. Owrey as receiver, on the petition of the Columbus Brass Company. Mr. Owrey will continue the business.

Work is expected to be started this fall on a \$1,000,000 project by the Little Miami Light, Heat & Power Company, which proposes to harness the Little Miami River. John W. Hill & Sons, First National Bank Building, Cincinnati, are the engineers and have the plans in preparation. The R. K. Le Blond Machine Tool Company expects to get into its new blacksmith shop by the middle of September. The old shop will be used for the installation of some new boilers. A new device turned out by this company, not yet

boilers. A new device turned out by this company, not yet marketed because of heavy bookings on older machines, is an automatic gear cutting attachment.

an automatic gear cutting attachment.

The new 90 x 100 ft. addition to the plant of the Cincinnati Shaper Company is nearing completion. It will be used for needed shipping facilities, and additional power equipment. An installation very recently of a new engine has assisted in catching up on delayed orders.

The organization of a company to erect and equip another power building here interests the power equipment peo-

ple. The work is being handled by Nicholas Smith & Sons,

Mercantile Library Building.

Mills, Spellmire & Co. have sold their plant in Third street to the Lockwood Mfg. Company. The purchaser will immediately equip the buildings for the manufacture of tin and japan ware.

A resolution adopted at the meeting of the International Union of Metal Polishers, Buffers, Platers and Brass and Silver Workers commits the organization to support the American Federation of Labor in its proposed legal proceedings against President James A. Van Cleave of the National Association of Manufacturers and other employers in their alleged maintenance and circulation of black lists. The course and action of the national officers in the conduct of the affairs of the organization during the past year were indorsed. Cincinnati will continue to be the headquarters.

The automobile trip and experience meeting of the Manufacturers' Club, postponed, will be made August 31. A run to Foster's Crossing, Ohio, will be a feature of the meeting.

New England Machinery Market.

Worcester, Mass., August 27, 1907.

Some slight nervousness, which hardly deserves to be called anxiety, exists in the trade regarding the revelations promised for the next month or two as to the actual conditions of business. The question, the answer to which is obscured at present by the influences of the vacation season, is how far the present depression is attributable to the usual summer falling off of orders, and how far to a reaction. While opinions seem to differ more than they have during the recent past, the commonly expressed view of the situation is that a lower level of business will be noted, as compared with that of 1906, but that it will be a condition more healthful and much more vigorous than is usually the case as a Presidential campaign approaches. It is characteristic of human nature to become a little overstrung as the time draws near when a vital question is to be answered, and that the autumn is looked upon as a critical period is evidenced by the almost universal allusion to it in conversations concerning business conditions and outlook.

The machinery dealers have had a pretty good week, taking their volume of business as a whole. Some nice orders, each running into several thousands of dollars, are reported, and there has been a considerable demand for single tools. One Boston dealer having Chicago connections states that his associate in that city reports undiminished demand. Inquiries continue numerous and promising. If all these indications of autumn trade should materialize, business with the Boston dealers would be very good indeed. The week has been an exceptionally large one, in one case the largest in the dealer's history, in totals of charges entered against customers on the ledgers, because of deliveries made on orders that were placed months ago, some of them more than a year ago. The stocks of some dealers, including stock orders not yet delivered, are getting low, and with the anticipated revival of demand the manufacturers should begin to receive stock orders in material volume, though the tendency to permit stocks to remain low and to place orders directly from customer to manufacturers likely to continue

directly from customer to manufacturer is likely to continue. Foreign business has held its own better than the domestic trade, little change having been noted. Those machine tool builders who have continued to give full attention to foreign customers in spite of a more profitable market at home are well pleased at the policy, and others are now turning their attention to this market.

Deliveries of machine tools continue to improve, though in most instances slowly. In some lines of general manufacturing little diminution of demand has been noticed. The machine tool trade generally, is quick to feel a depression, no matter how slight it may be.

More consideration is being given the development of new

More consideration is being given the development of new machinery and improvements, and important announcements may be expected from manufacturers who have carefully avoided publicity as to changes in their products.

The important announcement is made that John Becker, founder of the business of the Becker-Brainard Mi!ling Machine Company, Hyde Park, Mass., has returned to the company as vice-president and general manager, after a retirement of four years. He will couple with his duties as manager a general supervision of the manufacturing end of the business, as superintendent, with an assistant superintendent to help him. A. L. Lovejoy will remain with the company as sales manager. Mr. Becker first established the Becker Milling Machine Company and then consolidated with it at the Hyde Park plant the business of the Brainard Milling Machine Company of Fitchburg, Mass.

Becker Milling Machine Company and then consolidated with it at the Hyde Park plant the business of the Brainard Milling Machine Company of Fitchburg, Mass.

The Underwood Typewriter Company, Hartford, Conn., is to build a brick addition to its factory, 100 x 200 ft., one story and partial basement. The building will be devoted to general finishing of parts of typewriters, releasing space

now devoted to these processes in other parts of the works. The American & British Mfg. Company, Providence, R. I., is building the first steam turbine of the Wilkinson type to be used for commercial purposes. The engine will develop 300 hp. and is for Sanderson & Porter, New York, who will install it in a street railroad power plant at Youngstown, Ohio. The American & British Company is making preliminary plans for the great power plant which the Longacre Electric Light Company proposes to establish in New York, with the purpose of distributing electricity for light and power. The contract has been awarded to the American & British Company, stipulating the building and equipment of a station to develop 100,000 hp.

The American & British Mfg. Company is finishing up large additions to its works at Providence, which constitute the beginning of important extensions planned to replace the old buildings of the Corliss works, as well as creating additional space. At the north end of the main shop building, and at right angles to it, there has been erected a structure 45 x 420 ft. From the center of this building, and in a line with the main shop, a machine shop has been erected, 110 x 217 ft. This building with the old building forms the long arm of a cross, with the other new building as the short arm. This latter structure, extending east and west, is known as the transfer building, because it forms the vital connection between all the departments, as well as providing a large amount of useful space. It is covered by two Pawling & Harnischfeger electric traveling cranes of 15 and 25-ton capacity, respectively. The new shop is served by two cranes of the same capacity, traveling on parallel ways. Thus the handling of work from foundry to shop and from shop to the railroad car will be economically and expeditiously accomplished. The buildings are of brick and steel construction, with the maximum of window space, and are very high, having 28 ft. clear under girders and nearly 50 ft. under the apex of the flat-pitched roof. Double spur tracks pass through the westerly end of the transfer building, where the shipping department will be located. The easterly end of the building is broadened out to 71 ft. opposite the foundry, an old building, extending north. On the westerly side of the new machine shop is an ell, 48 x 71 ft., for a forge shop, and another, 71 x 97 ft., for store-house, toilet rooms, &c. The plans call for the replacing of the old foundry by a modern, larger building in the near future. The general scheme goes still further, and comprises the replacing on a larger scale of the long main building; the extension of the new machine shop; and a machine and erecting shop, extending north and south from the westerly end of the transfer buildings. The new buildings have been built over and around old shops, details of construction having been worked out so carefully that there has been hardly any interference with machinery, either through the shafting, both underground in trenches and overhead, or with the belting and the machines themselves. Consequently, there has been little reduction of producing capacity.
Wilcox, Crittenden & Co., Incorporated, Middletown,

Wilcox, Crittenden & Co., Incorporated, Middletown, Conn., manufacturers of marine hardware, are beginning important building operations as a consequence of the recent fire which partially destroyed their works. The result will be an increased capacity in volume of product, and also an extension of the company's line into larger work. A new forge shop will be erected, 90 x 240 ft., of concrete, with iron roof. It will be equipped with all modern appliances for the production of heavy and light drop forgings. Work has begun on a new galvanizing and tinning plant, to be located on a large tract of land on Durham avenue, recently acquired by the company, with double the capacity of the building destroyed by fire. The main building will be 60 x 200 ft. The shipping and storerooms will occupy separate wings, and have two floors 40 x 120 ft., and the tinning room will occupy another wing, 40 x 50 ft. The buildings will be of concrete construction. Every effort will be made to secure an abundance of light and perfect ventilation throughout the new buildings. With the large construction gang now at work it is expected that the buildings will be ready for occupancy within two months

The business of James H. Whipple, Worcester, Mass., manufacturer of woolen machinery and mill supplies, has been incorporated in Massachusetts with capital stock of \$200,000. The incorporators are James H. Whipple, Fred W. White and Henry F. Harris.

The North & Judd Mfg. Company, New Britain, Conn.. manufacturer of harness hardware, is to erect a new malleable iron foundry which will provide for 25 to 30 additional molders. Work will be rushed, as the company's foundry capacity is insufficient to meet the demands upon it.

The Engineering Specialty Company, Meriden, Conn.,

The Engineering Specialty Company, Meriden, Conn., manufacturer of electric goods, is to move its business to Stamford, Conn., where a new factory will be erected, which will include as a main building a two-story structure 40 x 150 ft. This will permit of doubling the company's manufacturing capacity.

The A. J. Smart Mfg. Company, Greenfield, Mass., organized to manufacture taps, dies and screw plates, is preparing to establish a factory, but as yet is undecided as to its location. It is possible that it may be situated in some

place outside of Greenfield. A. J. Smart is president and treasurer; R. S. Bascom, vice-president, and R. H. Smart,

secretary.

The Eastern Machine & Stamping Company, Providence, I., which established its business within a year in the works formerly occupied by the Household Sewing Machine Company, has perfected the equipment of its machine shop, and will make a specialty of the manufacture of experimental and special machinery and of tools and dies, this being in addition to the company's other line of stamped metal work. James H. Gault, the superintendent of the works, has had a broad experience in these classes of work. J. B. White is the secretary and treasurer, and looks after

the general management of the business.

The announcement that the New York, New Haven & Hartford Railroad is to expend \$12,000,000 for new rolling stock sets at rest any disquietude resulting from the report circulated some months ago that the company would make serious curtailments in proposed improvements. New England will get 100 passenger coaches to build, the contract having been let to the Osgood Bradley & Sons Company, Worcester. It is quite probable that these cars, or at any rate a part of them, will be built in new shops which the Bradley Company must build, as the present works will have to be abandoned in the course of abolishment of the city's grade crossings. There will be 40 Pullman coaches, city's grade crossings. There will be 40 Pullman coaches, 2 stateroom sleepers, 7000 freight cars, contracts for which are in the hands of the Standard Steel Car Company and the are in the hands of the Standard Steel Car Company and the American Car & Foundry Company; and 122 locomotives, 42 of which will be of the so-called Atlantic and Pacific type, costing \$12,000 each. The American Locomotive Works and the Baldwin Locomotive Works have these contracts. The freight cars alone will cost \$9,000,000. When the new equipment is received it is probable that the new repair shops at the western end of the New Haven system will become an imperative necessity, and it is believed that work upon them will begin another season. They will probably be located in or near New Haven, and will be as large, at least, as the shops at Readville, Mass.

Government Purchases.

WASHINGTON, D. C., August 27, 1907.

The Bureau of Supplies and Accounts, Navy Department, The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until September 3 for one universal woodworking machine for the naval station at Key West, Fla., and one punch and shear and two jib cranes for the New Orleans Navy Yard.

The Isthmian Canal Commission will receive bids until September 18, Circular No. 387, for a steam riveting machine, pneumatic tools and hoist, electric drill, vacuum pump, electric mater and other supplies.

electric motor and other supplies.

The Isthmian Canal Commission will shortly ask bids for 50 rock drills, one air compressor plant, to consist of two cross compound steam condensers and two cross compound air compressors, two air receivers, two horizontal water tube boilers, one duplex boiler feed pump, &c.; one tandem compound engine, one 100-kw. direct current generator and 12 type B steam shovels.

The following bids were opened August 20 for supplies

for the navy yards:
Bidder 15, F. S. Banks & Co., New York; 20, Buffalo
Forge Company, Buffalo, N. Y.; 26, Berry & Aikens, Philadelphia, Pa.; 34, Chicago Pneumatic Tool Company, New
York; 45, Columbus Pneumatic Tool Company, Religious, Ohio; 48, Central Metal & Supply Company, Baltimore, Md.; 51, Drew Machinery Agency, Manchester, N. H.; 54, Excelsior Equipment Company, Pittsburgh, Pa.; 57, Epping-Carpenter Company, New York; 61, Fairbanks & Co., Boston, Mass.; 62, Fairbanks & Co., Baltimore, Md.; 63, Gardton, Mass.; 62, Fairbanks & Co., Baltimore, Md.; 63, Gardner Governor Company, Quincy, Ill.; 65, General Electric Company, Schenectady, N. Y.; 67, Richard W. Geldart, New York; 69, A. E. Hoermann, New York; 80, Ingersoll-Rand Company, New York; 82, Independent Pneumatic Tool Company, Chicago; 89, Knox & Bro., New York; 103, Manhattan Supply Company, New York; 104, Montgomery & Co., New York; 106, Manning, Maxwell & Moore, New York; 121, National Electric Supply Company, Washington, D. C.; 126, Northern Electric Mfg. Company, Madison, D. C.; 126, Northern Electric Mfg. Company, Washington, Wis.; 141, John B. Roach, Brooklyn, N. Y.; 148, Charles E. Robedoux, St. Louis, Mo.; 156, Sherman-Brown-Clements Company, New York; 184, Westinghouse Electric & Mfg. Company, Baltimore, Md.

Class 61. One 25-hp. 115-volt motor—Bidder 65, \$1200; 126, \$1186; 153, \$1433; 184, \$945; 185, \$1192.

Class 101. One 100-hp. motor, one rawhide pinion one extended shaft and outboard bearing-Bidder 65, \$1227; 126, \$1425; 184, \$1124.

Class 133. One reversible pneumatic drill—Bidder 34, \$70; 45, \$70; 54, \$109; 80, \$90; 82, \$59.50.

Class 134. One pneumatic chipping and calking hammer—Bidder 34, \$40; 45, \$30; 54, \$69; 69, \$46; 80, \$40; 82,

\$33.50; 89, \$39.60. Class 136. One No. 12 reseating machine—Bidder 15, \$325; 48, \$325; 51, \$325; 54, \$169; 61, \$325; 67, \$325; 89, \$325; 103, \$325; 104, \$325; 106, \$325; 141, \$325; 156,

Class 139. One horizontal duplex pump—Bidder 15, \$608.75; 20, \$675; 22, \$725; 26, \$995; 54, \$675; 57, \$775 and \$819; 63, \$655; 89, \$960; 106, \$937.44; 121, \$605; 148, \$720,

The following awards have been made for supplies for the navy yards, bids for which were opened August 6:

Prentiss Tool & Supply Company, New York, class 51, one milling attachment for planer, \$298; class 53, two wet emery grinders, \$618.

Jones & Lamson Machine Company, Springfield, Vt., class 52, one turret lathe, \$1910.

Under bids opened July 30 for supplies for the navy yards, F. S. Banks & Co., New York, have been awarded class 116, one duplex boiler feed pump, \$40.

Trade Publications.

Friction Clutches .- W. E. Caldwell Company, Brook and Brandies streets, Louisville, Ky. Friction clutch catalogue No.

1. Confined to a presentation of the Caldwell friction clutch (Osterlein patents) in combination with pulleys, couplings, spur gears and sprocket wheels. Dimensions and prices of the various sizes and their parts are given in tabular form and illustrations are appended of an adjustable fulcrum stand for friction clutches and a worm-geared fulcrum stand.

Road Rollers .- Monarch Road Roller Company, Groton, Tompkins County, N. Y. Catalogue. The introduction makes the claim that the company operates the largest and best equipped plant devoted exclusively to the manufacture of road making machinery in the United States. Description follows of the Monarch steam road roller and its principal features. Brief mention is also made of the Monarch push cart or can carrier, the Monarch street sweeping machine and the Groton traction engine, water wagon and portable engine.

Steam Specialties .- J. B. Hackett, 5 Beekman street, New York City. Circulars and circular letter. Invite attention to the specialties for which Mr. Hackett is manufacturers' agent, and include the New England roller grate; Baush inspirator or hot blast; Lawrence damper regulator; Watts reducing valves, pump governors, spring regulators, &c.; Sterling metallic packing; Perfection flue cleaners, oil filters and engineers' tools; Lindstrom's Corliss valve steam traps and superheater separators, and Demon and Torpedo tube cleaners.

Coal Handling Machinery .- C. W. Hunt Company, West New Brighton, N. Y. Catalogue No. 072. Size 6½ x 9½ in.; pages 64 Published for the use of engineers and architects and furnishes the necessary information for installing coal handling machinery for power stations, boiler rooms, coaling stations, gas companies, coal yards, shipping docks, manufactories, &c The subject matter is too comprehensive to be mentioned here in detail; it is sufficient to say that it includes all that the general. title signifies. It is deserving of comment that the manufacturer has compiled it to include the data that a designer of a plant needs to decide upon the suitability of any of the apparatus and to allow for its installation.

Gears .- Boston Gear Works, Norfolk Downs, Mass. Catalogue B and price-list. Size 5 x 8 in.; pages 56. company's standard gears and is claimed to be the largest list of gears ever published. Most of them are kept in stock for immediate shipment. In addition to gears proper-spur, bevel, miter. worm, spiral and internal, made in steel, iron, brass, rawhide. &c .- there are also shown various types of transmission chain, universal and ball joints, crown gears, escape wheels, ratchets. pawls, small brass clutches, tool steel balls, motor and clock springs, bearings of all descriptions and a safety automobile steering gear.

Corliss Engines .- Minneapolis Steel & Machinery Company, Minneapolis, Minn. Brochure No. 101. Size 6 x 9 in. : pages 40. Contains a painstaking and attractive presentation of the constructional and operative features of the Twin City Folded inserts show large half-tone engravings Corliss engine. of both sides of the engine and numerous other illustrations portray in detail the more important parts, such as frame, bearings, guides, cross head, valve mechanism, valves, crank shaft, &c. Several views are given of actual installations, and with the book are inclosed facsimile testimonial letters. last few pages deal with accessories-the Twin City jet condenser, an evaporative surface condenser, and an exhaust steam feed water heater.

Valves .- Homestead Valve Mfg. Company, Pittsburgh, Pa. Box 1754. Pamphlet. Lists the Homestead self locking straight. way; three-way and four-way high pressure balanced plug valves and Homestead locking cock. Also calls attention to the company's facilities for supplying brass castings to order.

Ferrofix .- American Ferrofix Brazing Company, 1003 Arcade Building, Philadelphia, Pa. Catalogue. Size 6 x 9 in.; pages 30. Has for its subject "Ferrofix and Its Uses." A description is given of the manner of using the material, and several reproductions of repaired machinery castings.

pany carries on a general repair business and manufactures and sells the brazing compound. Concerning the former branch of its work there are many letters of indorsement from satisfied customers reprinted in the catalogue.

Engineering.—Dodge & Day, Drexel Building, Philadelphia, Pa. Pamphlet No. 16, one of a series concerning recent work undertaken. This one deals particularly with methods and work of an engineering organization, and contains illustrations of a power house recently completed for the Lehigh Coal & Navigation Company, Lansford, Pa.; a new plant now in course of erection for the Wagner Electric Mfg. Company, St. Louis, Mo., and the new factory built for the Arthur Koppel Company near Pittsburgh, Pa.

Pumps.—Latta & Martin Pump Company, Hickory, N. C. Catalogue. Size 8% x 11 in.; pages 20. Contains an extended description of the Latta-Martin pneumatic displacement pump, which is peculiarly adapted for long distance pumping, as its motive power, compressed air, can be economically transmitted quite considerable distances with little or no loss. The pumps are made in sizes to cover the wide range of requirements which exists, from municipal water works to small factory or even residence pumping plants—in other words, of capacities from 10,000 to 5 gal. per min. The catalogue points out the advantages of compressed air over steam pumps, emphasizing particularly the greater economy. For deep well pumping two kinds of equipment are shown, one operating on the displacement system and the other on the air lift principle, both, however, making use of compressed air.

Injectors.—Hayden & Derby Mfg. Company, 85 Liberty street, New York. Folder. Explains the working and uses of the Metropolitan model X injector. It will start at 20 lb. and work to 160 lb., and will lift water 20 ft. with a steam pressure of 80 lb. Price-list is given of the eight sizes in which it is made, ranging in capacity from 60 to 620 gal. per hour, with 65 to 90 lb. steam pressure and 2-ft. lift.

Pyrometers.—H. L. Dixon Company, 8 Wood street, Pittsburgh, Pa. Catalogue. Size 6 x 9 in.: pages 35. Price's Perfect pyrometer, of which this catalogue gives a very complete description, is manufactured by the Electric Dental Specialty Company, Cleveland, Ohio, and the H. L. Dixon Company is sole agent. It is a thermo-electric pyrometer capable of measuring temperatures as high as 3000 degrees F., and is especially adapted for use in connection with melting, annealing and heating furnaces, kins, and for research work and scientific tests. The catalogue contains an account of the principles of its operation, its construction and the manner of installing and using, and also a considerable amount of useful information in the way of conversion formulas for the three standard thermometer scales, fusing, melting and boiling points of various substances, the color effect of heat on iron and tempering colors for steel. Testimonial letters and a list of users are appended.

Vessel Designs.—J. W. Millard, naval architect and marine engineer, 17 State street, New York. Album. Contains plate engravings of a number of vessels designed by the publisher, including the C. W. Morse and the Hendrik Hudson.

Pumps.—Woodin & Little Pump House, 534 Mission street, San Francisco, Cal. Catalogue No. 33. Size 7 x 7¾ in.; pages 160. Embraces all of the lines of machinery handled by this concern, which in part are as follows: Stover gasoline engines and accessories; power transmission apparatus; Red Cross windmills, towers, tanks, &c.; various makes of hand pumps and deep well hand and power pumps; all of the parts that go with a well equipment; Goulds suction pumps, hydraulic rams, spray pumps, triplex power pumps and the complete Goulds Mfg. Company's line; pipe and fittings and plumbers' and steam fitters' tools and equipment.

Turbine Water Wheels.—Poole Engineering & Machine Company. Baitimore, Md. Refers particularly to the Poole-Leffel turbine water wheel, describing its construction and illustrating a variety of ways in which it may be applied. Information of value to users and designers of hydraulic powers takes up a considerable part of the book, a special feature in which is a set of tables giving the power, revolutions per minute and cubic feet of water discharged per minute, for each size of the company's wheels, under heads from 3 to 40 ft. In general illustrations occupy the right-hand pages and text concerning each appears on the facing pages. Clutches, pulleys and machine molded gears, such as are used in transmitting power from water wheels, are also dealt with.

Storage Hatteries.—Electric Storage Battery Company, Allegheny avenue and Nineteenth street, Philadelphia, Pa. Bulletins and memorandum book. Bulletin No. 87 describes the automatic water filling apparatus and compensating hydrometer made by this company for use in connection with Chloride Accumulators. No. 95 treats in some detail an installation of these accumulators for the Carnegie Steel Company at Youngstown, Ohio. No. 93 describes the calbon regulator for automatic booster control. The memorandum book is a compilation in convenient pocket size of information and data frequently used by electrical engineers, and has blank pages for the individual user's additional notes.

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The Influence of Carbon on Cast Iron.

Investigation by W. H. Hatfield.

W. H. Hatfield has continued his work on this subject and has made a report as a Carnegie scholar to the Iron and Steel Institute. The title of his paper is "Cast Iron as Cast and Heat Treated." His previous work was fully abstracted in *The Iron Age*, December 27, 1906.

The Decomposition of Carbides.

The author's intention in the recent experiment was to determine, if possible, the regions of temperature in which the carbides are decomposed, and to determine whether the recalescence point Ar. 1 had that important bearing upon the decomposition which would be inferred from the work of Turner, Arnold, and McWilliams, and Charpey and Grenet. The material employed had the following analysis:

Per cent.	Per cent	t.
Combined carbon3.40	Silicon1.10	0
GraphiteNil.	Sulphur0.00	6
Manganese	Phosphorus0.0	4

The whole of the test bars used were cast in the same molding box from the same ladle, and were allowed to cool in the sand. They were all heat treated together in the same annealing oven, the "transformation" of the structure being arrested at different temperatures, as required, by rapidly cooling in the air. Six bars were taken:

No. 1 was the initial material as cast.

No. 2 was the material after it had attained a heat of 780 degrees C. (1436 degrees F.).

No. 3 was the same when 820 degrees C. (1508 degrees F.) had been attained.

No. 4 was the material when 860 degrees C. (1580 degrees F.) had been reached.

No. 5 was the material that, without exceeding 900 degrees C., had cooled during a period of 24 hr. to 750 degrees C. (1382 degrees F.).

No. 6 was the material that, after a further 24 hr., had cooled to 650 degrees C. (1202 degrees F.).

It will, therefore, be seen that No. 1 represents the iron as cast; Nos. 2, 3 and 4 are on the upward curve, and Nos. 5 and 6 represent the period of cooling down. A test bar was rapidly cooled in air, as described, from each of

The bulk of the pearlite has therefore disappeared during cooling from 750 degrees C. to 650 degrees C.

These experiments suggest that the decomposition of the carbide, Fe $_8$ C, the cementite, took place between 800 and 900 degrees C. (1472-1652 degrees F.), and that the pearlite or subcarbide decomposed between 740 and 650 degrees C. (1364-1202 degrees F.).

The Nature of Temper Graphite.

The general character of the temper graphite, or "annealing carbon," seems to be that of a nodule with rough and diffused edges. On examination at high power the nodule reveals a laminated structure, as if it consisted of numerous laminæ and membranes of free carbon in some ferritic constituent. Certainly this tyre would lead one to believe that these nodules do not consist of entirely free carbon.

Another variety has as its chief characteristic the practically structureless "kernel" of the interior of the nodule, which is surrounded or inclosed by a band of black constituents, presumably free carbon. The kernel is generally of a brownish slate color. It would almost appear that the latter is a further development of the former

Casting Temperature.

A new series of experiments was made to thoroughly test the influence of the casting temperature. The first series was with hard and white irons, the second with soft and gray ones. In each case the "hot" is very hot, the "fair" an ordinary working temperature, and the "cold" just fluid enough to satisfactorily run the test bars. The bars cooled in the sand. The results obtained with the white iron are given in Table 1, the hot, fair and cold being all poured from the same ladle in sequence.

On referring to the table it will be seen that the tensile tests in the cast state show the "fair" giving the lowest test, abnormally low for a white iron; the "hot" giving a moderate result, but the "cold" a decidedly good one. The microstructure of the "cold" bar showed a well mixed, well knit structure of cementite and pearlite, while the other two gave sharp structures with well defined angles.

After heat treatment it is seen that both the "fair" and the "cold" give high tensions; the "hot" bar had a small incipient crack which led to fracture. The fractures of all three had a distinctly steely appearance,

					Ta	ble I W	Thite Iron.				
			Ana	lyses.—			Tem-		Dit. stress.	Elongation	Reduction of area.
No.	C. C.	Gr.	Sil.	Man.	Sul.	Phos.	perature.	Condition as	Pounds.		Per cent.
Α	3.43		0.93	0.10	0.056	0.03	Hot.	Cast.	24,953		
В	3.40		0.93	0.10	0.056	0.03	Fair.	Cast.	17,808		
C	3.41		0.93	0.10	0.056	0.03	Cold.	Cast.	38,528		
A	0.56	2.61	0.93	0.10	0.057	0.03	Hot.	Heat treated.	54,656	1.0	1.5
В	0.55	2.58	0.93	0.10	0.056	0.03	Fair.	Heat treated.	77,056	1.16	1.47
C	0.56	2.59	0.93	0.10	0.057	0.03	Cold.	Heat treated.	77,728	2.0	2.7

these temperatures, and a section made, polished and etched with picric acid. Photomicrographs were taken, which are given with the paper as published in the *Journal* of the Iron and Steel Institute, No. 2, 1907.

The structure of No. 1, the original cast iron, consists of pearlite and cementite, the latter existing as well defined membranes.

With No. 2 the cementite has become broken up, and the pearlite contains numerous small nodules of cementite. No temper graphite or annealing carbon is present. This certainly looks as if the pearlite has absorbed some of the cementite, which had again been thrown out during the rapid cooling.

No. 3 shows a groundwork of pearlite, in which are to be noticed the broken up and fastly disappearing membranes of cementite. Temper graphite is also present in nodular form.

No. 4, which is the sample that attained 860 degrees C., is similar to the las' described structure, but contains much less cementite and more graphite. This shows that the transformation of the material is progressively taking place.

No. 5, which represents the metal when the cooling had commenced, consists of a matrix of pearlite in which are numerous areas of ferrite, besides the ever increasing temper graphite. Here and there, also, are to be seen small particles of the undecomposed cementite.

No. 6 consists practically of ferrite and graphite.

while the "hot" bar showed, besides the small crack, a distinct "direction" of flow in the crystallization which was absent from the other two.

In Table 2 are given the results obtained with the gray iron:

Table 2 .- Gray Iron.

									Ult.
							1		stress.
								Condition	
G	.0.52	2.93	2.14	0.11	0.051	0.04	Hot.	Cast.	15,702
Н	.0.54	2.94	2 14	0.11	0.053	0.04	Fair.	Cast,	18.816
I	.0.54	2.96	2.14	0.11	0.051	0.04	Cold.	Cast.	29,075
G	.0.20	3.21	2.14	0.11	0.053	0.04	Hot.	Heat treate	ed. 6,316
Н	.0.21	3.22	2.14	0.11	0.053	0.04	Fair.	Heat treate	ed. 7,168
I	.0.18	3.17	2.14	0.11	0.052	0.04	Cold.	Heat treate	ed. 8,937

From this table the strength would seem to have improved by the lowering of the casting temperature. Especially is this noticeable with the "cold" bar. The fracture of this last bar was of a much finer grain or smaller crystallization. From this and his previous researches the author draws the following conclusions:

 There is undoubtedly a great variation in the strength of cast iron of the same composition as cast.

This variation does not appear to follow any distinct rule with regard to the temperature of the casting operations.

3. A difference in mechanical tests is generally accompanied by a difference in microstructure.

4. The inequalities of the metal can be removed by judicious heat treatment.

G. B. W.

HARDWARE

NOT for many months has the entire business world been so concerned over the future and so apprehensive of its outcome as now. Everywhere the cry goes up, "Watchman, tell us of the night and what its signs of promise are." It would not be difficult to make some intelligent forecast if we had only known conditions and elements to deal with, and, further, had only to judge the future by the past. The uncertainty arises from the introduction of new and strange factors, concerning whose workings all prophecies must be idle—the unrest and apprehension in high financial circles; the uncertain state of the public mind toward corporations; the undeniable spread of socialistic ideas; the perplexities of the financial situation, and the shadow of a coming Presidential year. All these combine to render the problem entirely beyond the solution of the wisest man. Yet there are some substantial things to comfort us, for we know that business conditions are intrinsically sound; that the almost assured promise of the crops is one of normal production; that the country as a whole is out of debt and prosperous. Nor should we forget that the serious and far-reaching panics of the past-those of 1837, '57, '73 and '93-were caused by either a debased or inflated currency, and that good times did not return until the evil was remedied. Now no such danger confronts us, for our currency is in a healthy condition and resting upon a firm foundation.

The principal difficulty with our finances is that commercial demands have apparently outrun the increase in the circulating medium, the natural demand for money for betterments and expansion having temporarily outstripped the supply. The natural remedy, and one that will work automatically, is that there shall be some healthy slowing down in business ventures until the circulating medium shall meet the demand by its gradual increase, possibly supplemented by such currency legislation as business interests may succeed in getting through Congress. The element of inflation, the precursor of all financial panics, is fortunately entirely absent. The principal difficulty is one purely of apprehension, particularly as regards the temper of both the Government and the people toward corporate interests.

It is already an old story that we have been experiencing a moral awakening, and in any such crisis somebody is going to get hurt-sometimes the innocent along with the guilty-but, whatever may be the extent of popular indignation on any subject, we can be very sure from past experience that the moments of hysteria are but of brief duration and that in the long run reason and common sense will decide the issue. The net result is sure to be beneficial to the moral health of the nation. Whatever modifications new ideas may make in our social and business structure, there does not now seem any reason to apprehend that the field will be narrowed for individual effort and opportunity. The most influential factor of all is not only the probable continuation of present conditions with temporary halts only, but the steady progress toward a higher plane, which is found in the study of past periods of prosperity, each marking a higher advance than the preceding one, and placing our general business conditions upon a still higher level.

Events in the past decade have pretty thoroughly discredited the once widely held theory of steadily declining wages and methods of living because of increasing pressure of population. They have shown instead an awakening among the long dormant nations of the East from which opportunity and effort seemed to have permanently departed. One of the commercial distinctions between the civilized and the savage is the difference in their wants, and now to the recently created wants of the East must be added the largely increased wants of the great masses of our own people because of much prosperity. None of these latter, having once experienced better conditions, will willingly sink back to former conditions for any length of time. These wants must be taken care of by increased facilities of production, distribution and transportation. Here we may seek for the hope of the ultimate dominance of better conditions.

Condition of Trade.

We are approaching what must undoubtedly be regarded as a crucial period in the Hardware market. The marked cessation of buying by jobbers and other large interests, accentuated by the usual summer duliness, has run so long that the majority of manufacturers have practically balanced their order books. Much depends on whether or not buyers will have confidence to come into the market in the near future with orders liberal enough to furnish needed work for factories and mills. There is, of course, a class of manufacturers whose product holds such a commanding position and whose financial backing is so strong that they have no cause for anxiety. The steady demand for their goods is increasing with the growth and expansion of the country, and only by the constant enlargement of their plants are they able to keep pace with the normal increase in their business. On the other hand, there is a class of more limited resources whose goods do not sell themselves and who cannot afford indefinitely to accumulate stock. These must secure new business, and it is here, if anywhere, that weakening may be expected. In one respect at least the situation is unique as compared with any which the trade has experienced in the past. Never before have manufacturers presented such a united front. Prices in nearly every quarter of the market are regulated or controlled by more or less formal arrangements, born of prosperity, but now likely to be subjected to a test. Under such conditions, if manufacturers have confidence enough in each other to accept a slackening of business without fearing that orders are lost through price cutting on the part of a competitor we shall have a stable market, although accompanied, perhaps, by a slow recession in prices, due to a decline in the cost of raw material. That such will be the outcome is the belief of many wise and experienced judges in the trade.

Chicago.

With the wane of summer, which has brought to maturity and harvest a fairly bountiful measure of cereal crops in spite of multiplied predictions of disaster, the basic conditions of prosperity are found to be unshaken. True it is that certain localities have felt and reflected in lessened consumptive demand shortages in yield, but these are neither numerous enough, nor do they cover districts of sufficiently great extent to have a marked effect on trade in general. Other conditions, however, have counseled caution in the extension of operations, and the result is seen in some moderation of the pace with which for many months it has taxed the efforts

of manufacturers and jobbers to keep step. At the same time dullness cannot be said to exist in any of the Hardware lines. In fact, August sales bid fair to equal those of the same month a year ago, a result that was scarcely anticipated some weeks since, even by the most sanguine. But the easier movement of goods from factories bespeaks a less crowding demand. Orders are now being executed with reasonable promptness save in a few lines. Shipments of Wire Nails, Galvanized Sheets and Wood Screws are still below actual requirements, though in all there is slow improvement. Continued recession in Spelter foreshadows future modification in prices of Galvanized Goods. An informal meeting of Spring Hinge makers, held in Chicago last week, proved barren of results, because of the absence of prominent interests. It is reported that a realignment of prices, which on the whole produced no radical changes, was effected at a recent meeting held in New York by the representative makers of Builders' Hardware. The near approach of the shooting season, which in some of the Western States opens September 1, is responsible for an active trade in Ammunition and Guns. Forward contracts for fall and winter goods are being booked in volume that is by no means disappointing. The situation at the present time seems to afford no ground for complaint aside from the fact that collections are somewhat slow. It is expected that this condition will to a large extent be relieved when a free movement of crops begins.

NOTES ON PRICES.

Wire Nails.—Reports indicate almost ideal conditions as ruling in the Wire Nail market. The supply of Steel and cars is fully up to requirements, the demand is unusually large for the season and the mills are said to be strictly adhering to regular quotations, while shipments are being made more promptly. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers...\$2.00 Carload lots, to retail merchants...2.05

New York.—During the week the demand has fallen off somewhat, but it is considered a temporary condition of the market. The local market is generally maintained, except that sometimes Hardware jobbers sells Nails at less than regular quotations. New York jobbers' quotations are: To retailers, carloads, on dock, \$2.19; less than carloads, on dock, \$2.33; small lots at store, \$2.30.

Chicago.—The movement in Wire Nails is slightly easier, and the mills show gains in output over new bookings. Jobbers and consumers alike will find relief in a return to normally prompt shipments. Prices are firm. Quotations are as follows: \$2.18 in car lots to jobbers and \$2.23 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Present conditions in the Wire Nail trade are referred to by the manufacturers as being very satisfactory, the demand being unusually large for this season of the year, and the supply of Steel and cars fully up to requirements, while established prices are being rigidly maintained; in fact, it is stated that leading Wire Nail interests are absolutely adhering to prices, refusing even the smallest concession. Just now the demand is practically heavy from the South, and large shipments are being made by Pittsburgh mills to Southern points. It is believed the present active condition of the Wire Nail trade will be maintained throughout the balance of this year. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Cut Nails.—Mills are enabled to make more prompt shipments than for some time, owing to the better supply of Steel and cars. New business is not heavy, but specifications on contract orders are keeping the mills well employed. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, \$2.10; less than carloads, to jobbers, \$2.15; less than carloads, to retailers, \$2.25. Iron

Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails

New York.—There is comparatively little doing in the local market, as the demand is moderate. Prices are generally maintained, except as Hardware jobbers sometimes cut prices. New York jobbers' quotations are on the basis of \$2.30 for small lots at store.

Chicago.—Though not sharing in full the activity noted in Wire Nails, there is a fairly good demand, to meet which jobbers' stocks are ample. Prices also are reasonably well maintained. Quotations are as follows: Iron Cut Nails, car lots, to jobbers, \$2.38; to retailers, \$2.43; Steel, to jobbers, in car lots, \$2.28; to retailers, \$2.33.

Pittsburgh.—The mills are making prompt shipments on specifications and orders, being able to do this by reason of a full supply of cars and of Steel, deliveries on the latter being better than for a long time. The new demand for Cut Nails is rather light, but specifications on contracts are coming in freely and serve to keep the mills busy. It is claimed that prices as fixed recently are being maintained by the mills, but are shaded by some of the jobbers, who are selling Nails from stock, bought when prices were lower than they are now. Quotations are as follows, f.o.b. Pittsburgh: Carload lots, to jobbers, \$2.10; less than carloads, to jobbers, \$2.15; less than carloads, to retailers, \$2.25. Iron Cut Nails at points west of and including Buffalo and Pittsburgh are held at 10 cents advance on Steel Cut Nails.

Barb Wire.—Specifications on contract orders are heavy enough to keep the mills busy. The current demand is somewhat light. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	\$2.15	\$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Chicago.—With no accumulation of stocks, either at mills or in jobbers' hands, there is more or less difficulty yet experienced in the execution of orders. Specifications on contracts come in without urging, and buyers are insistent on early deliveries. We quote as follows: Jobbers. Chicago, car lots, Painted, \$2.33; Galvanized, \$2.63; to retailers, car lots, Painted, \$2.38; Galvanized, \$2.68; retailers, less than car lots, Painted, \$2.50; Galvanized, \$2.80; Staples, Bright, in car lots, \$2.30; Galvanized, \$2.60; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—While the usual season has been over for some time, a fair amount of new business is being placed in Barb Wire, but the mills are running mostly on specifications on contracts, which are still coming in quite liberally. The mills are pretty well caught up on back orders and are now receiving a full supply of Steel and of cars. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	Painted \$2.15	Gal. \$2.45
Retailers, carload lots	2.20	2.50
Retailers, less than carload lots	2.30	2.60

Smooth Fence Wire.—The demand is taxing the capacity of the mills, and manufacturers of Fencing are especially urgent for prompt shipments. A large volume of new business is being received by the mills. Prices are firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads \$1.85 Retailers, carloads 1.90

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

 6 to 9
 10
 11 12&12½ 13
 14
 15
 10

 Annealed....Base.
 \$0.05
 .10
 .15
 .25
 .35
 .45
 .5

 Galvanized....\$0.30
 .35
 .40
 .45
 .55
 .65
 1.05
 1.1

Chicago.—Requirements of Fence makers and manufacturers of all kinds are extremely heavy. The volume of specifications and new business offered is great and is taxing mill capacities to the fullest extent. Quotations are as follows: In car lots, to jobbers, \$2.03 f.o.b. Chicago, and to retailers, \$2.10.

Pittsburgh.—The volume of new business continues heavy, especially from the South, some large orders having been placed in the last month or two for delivery to Southern points. Specifications on contracts are also coming in freely. The makers of Fencing are urging the mills for prompt delivery, and shipments are heavy. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent, discount for cash in 10 days;

Jobbers, carloads...\$1.85 Retailers, carloads...1.90

The foregoing prices are for base numbers, 6 to 9.

Expansion Bolts.—Owing to the higher cost of material the Star Expansion Bolt Company, 147 Cedar street, New York, has advanced the list prices on Star Expansion Shields and Star Expansion Bolts, complete, which will go into effect September 1. Discounts from the new list will be the same as those from the previous list. The list prices on Anchors have also been revised.

Copper Products.—The same market conditions prevail in Copper and Brass materials as reported last week, there being uncertainty and hesitancy on the part of buyers, who order only for pressing wants. While nominal base prices remain as fixed several weeks ago, concessions are rather freely made, and there is a belief in some quarters that September will bring lower official prices and more in harmony with actual market rates.

Asbestos.—The market for Asbestos goods is firm, at prices established some months ago, for millboard, paper, rope and wick packing, &c., prices for all pipe coverings having advanced about 10 per cent. carlier in the month. The market for material of this character has been stiffened by the increased demand on the Canadian mines for raw material by manufacturers in Europe, who, it is said, are unable to obtain sufficient supplies from European sources.

Refrigerators.—L. H. Mace & Co., New York City, announce that owing to the increased cost of materials and labor an advance in the prices of their Refrigerators has been determined on, taking effect September 3. The new list prices are given in a circular just issued.

Glaziers' Points.—As a consequence of the recent heavy declines in Sheet Zinc, quotations on Zinc Glaziers' Points have shown a declining tendency. Present prices of various manufacturers show a reduction of 1/4 to 1/2 cent per pound.

Coil Chain.—Prices on proof Coil Chain, which have not been especially strong of late, are said to show a stiffening tendency. Report has it that an effort is being made to get the market on a more uniform level. Whether or not this will be possible in the face of the weakening tendency shown by the raw material markets remains to be seen.

Scythes and Snaths.—It is assumed that prices on Scythes for 1908 will be out by September 1. On Snaths the situation is somewhat complicated and prospects are uncertain. It is said that efforts are being made to secure a somewhat more uniform level of prices, but it is not unlikely that the market will remain open as it was last year.

Steel Goods.—It is now quite generally expected that the announcement of next season's prices on Steel Goods will be made about September 1. Whether inspired or not, the belief is prevalent that there will be a moderate advance on last season's schedules.

Padlocks.—Noteworthy stiffness is observed in quotations on Padlocks, which as yet have shown no effect of the decline in Brass and Copper. It is asserted that business continues in fair volume, and the prediction is made that prices will be maintained on a stable basis. Competition among the larger manufacturers is not carried to the extreme and, indeed, outside makers seem to be less a disturbing factor than usually in the past.

Diamond Expansion Bolts.—A new price-list on Diamond Expansion Bolts and Shields, superseding all former lists, has been issued by Diamond Expansion Bolt Company, 9-15 Murray street, New York. The list is effective September 1. It represents considerable advances on nearly, all the company's products.

Tacks.—The tone of Tacks exhibits remarkable firmness and regularity. It may safely be asserted that never has the market for these goods shown such sustained uniformity and strength as during the past year. The statement is made that few if any concessions are now offered in spite of a reduced volume of business.

Rope.—The new demand for Rope is somewhat light, but manufacturers are generally busy filling contract orders. Quotations are as follows: Pure Manila, 12½ to 12¾ cents; B quality, 11½ to 11¾ cents; Pure Sisal, 9 cents, lower grades Sisal, 7¾ to 8 cents; No. 1 Jute, ¼ in, and up, 9 cents; No. 2 Jute, 8½ cents.

Window Glass .- It is reported that the wage committee of the Amalgamated Window Glass Workers of America met with the Executive Board of manufacturers, and that it was decided to issue the wage scale to manufacturers applying for it, to become effective Saturday, September 14. The scale has not yet been made public. it is stated. Window Glass manufacturers in Kansas are reported as having agreed not to begin work before October 15, and not at that time unless conditions warrant a start. Local demand is very quiet and prices are reported as ranging, according to the anxiety of the seller, from 90 and 10 to 90 and 15 per cent, discount on single; and from 90 and 10 to 90 and 20 per cent. discount on double strength Glass. This is from the jobbers' list, October 1. 1903. Western jobbers' discounts are reported as being 90 and 10 per cent. discount for the first three brackets of single thick; 90 and 15 per cent. for other brackets of single thick and 90 and 20 per cent. discount for all sizes of double thick, from the same list,

Linseed Oil .- According to reports, which are considered authentic, the cold snap in the northern part of North Dakota about August 22, which was accompanied by frost, did little or no damage to the Flax Seed crop. Crushers are keeping up prices for Oil as long as they can, and it will probably be three weeks or more before seed in any quantity comes on the market. If the crop proves to be as large as anticipated, the price of Oil will be lower. The market is weak and buying is mostly confined to small lots. It is interesting to know that a carefully compiled statement of the world's production of Flax Seed by countries for the three years 1903-1905, has been prepared by the Department of Agriculture at Washington. From this statement, the Oil, Paint and Drug Reporter remarks, it appears that for the three years covered the production averaged a little more than 107,000,000 bushels per annum. Argentina leads the world in production, and the United States occupies second rank. The American crop for 1906 is given as 25,-576,146 bushels. New York quotations for Oil, according to quantity, are as follows: City Raw, 43 to 44 cents per gallon; Out of Town Raw, 39 to 41 cents per gallon; Boiled Oil is 1 cent a gallon over Raw.

Spirits Turpentine.—The demand has been light during the week, a reflection of conditions in the South. Buying has been restricted, for the most part to small dealers. Values have fallen off about 1½ cents per gallon. New York quotations are as follows, according to quantity: Oil Barrels, 58 to 58½ cents; Machine Made Barrels, 58½ to 59 cents per gallon.

The copartnership formerly existing between John Briggs, B. Hammond and Albert E. Cole, under the style of John Briggs & Co., Boston, Mass., has been dissolved by mutual consent. Mr. Hammond and Mr. Cole have purchased the entire interest of Mr. Briggs in the real estate and personal property of the firm, excepting only the name John Briggs & Co., and will continue the business under the style of the Tremont Paint & Varnish Company. The new company states that it will give special attention to the Boston brand pure prepared house Paints, Bronzene, Anchor Putty and Elastic Roof Cement, Challenge Lead, &c. The company is enlarging its plant at East Boston, and with increased facilities and resources solicits the orders of the trade. The office continues at 14 and 16 Washington street, Boston, where correspondence should be addressed.

SALESMANSHIP AND ADVERTISING.

BY O. B. JAMES.

THE Wind and the Sun had a dispute as to which could first make a man take off his coat.

The Wind had first try. It blew and it roared, it stormed and it blustered; it picked the man up and threw him down, but the man only buttoned his coat the tighter. Finally the Wind in despair ceased to blow

Then the Sun came out in its radiant beauty, embracing the man with its rays of light and warmth, gradually increasing the intensity of the latter, until, with perspiration streaming down his face, the man stripped his coat.

I repeat this fable thinking that some of my readers may have forgotten their nursery days.

Did it ever occur to you how nicely it applies to salesmanship? Have you ever tried to "bluff" a delinquent debtor and found that coaxing would have brought better results? Then, why not remember this little tale when you are preparing your advertisements? Don't blow and bluster; the reader will only "button his coat the tighter."

How Different.

Did you ever read a "personal" letter or circular letter of a Chicago catalogue house? Didn't you notice that it ended like this: "Please try one of these; we know you will be pleased with it."

Did you ever read in a country paper something like this? "I have just received four carloads of and you will consult your own interests if you call and see my line at once.'

Just compare the warmth, the attractive force of one statement with the windy repellent force of the other and judge as to which will bring results.

What the Public

Cares For.

Keep your goods to the front and keep your personality in the background. The public cares more for what they get and what they have to pay for it than they do from whom it was purchased.

We have much to learn in this respect from our Hebrew friends. You have noticed to what extremes they sometimes go to hide their personal identity. Soloman Levi runs "The Bear Store," Jakey Einstein "The Fair I do not mean that a merchant should go to this extreme, but that he should use his name simply as a means of identification and location.

The man who never made an enemy never made anything. You may have readers who dislike you personally: men who differ in religion and politics, but who would trade at your place of business if you could show them that it was to their advantage to do so.

But you could never win them by boastful claims of being the "only pebble on the beach," and making your wares inconsequential compared to your personal importance in the business world.

The Matter

Price and quality mix like oil and water. If you are advertising goods of worth and merit don't ever suggest the word "price." Say nothing that will detract the reader's attention from the exceptional value of the article offered.

Glance over the advertising pages of The Iron Age and note the high grade machinery and other meritorious articles offered. Do you see price quoted?

On the other hand, if you have some goods of indifferent quality to offer, something that you can sell cheap, by all means quote price; let it be a low one, and let it be in large, bold faced type, and the dominant feature of your advertisement.

The catalogue houses and department stores make price the dominant feature of their advertisements. They are in a position to use this style of advertising exclusively, for in the case of the former the goods are not inspected before purchase, while with the latter the trade is mostly transient and not affected by a few disgruntled purchasers.

Don't mention the word "price" unless you quote it. Say nothing that will detract the reader's attention from the exceptional value of the article offered, unless you can quote an exceptionally attractive price, and then let the price be the dominant feature of your advertisement.

If you are up against mail order competition, study its methods and combat it as best you can. "The best way to compete with catalogue house trade is to compete with it not by viewing with alarm its encroachment upon your trade, but by doing some corking good advertising yourself," says an authority.

THE BARRETT COMPANY'S MEMORY JOGGER.

OME time since the Barrett Hardware Company. Joliet, Ill., distributed a valuable booklet entitled Just a Little Jogger," a page from which, reduced in

"Three hundred and fifty knives for a selection at Barrett's." Molding Boards, 45c, 55c, 65c Measures (quart, 10c Meat Granders, \$1.75, \$2.50, \$3.75 Nut Crackers, 10c, 20c sinders, \$5: 26, \$2.50, \$3.50 kers, no. 26c co. 1178, \$6: 10c do 10 kers, no. 26c co. 1178, \$6: 10c do 10 kers, \$6: 10c do 10

Barrett Shop and How pumps do in course We can fix it

Shop and How we repair tin roofs; we repair tin roofs; we put your eave troughs in order; we are plumbers, steam and gas fitters and headquarters for furnaces, hot water and steam heaters.

Our charges are for the work we do only, and always moderate. You may want a bath-room fitted up, or a heat-run salaul installed. There are a thouwant a bath-room fitted up, or a heat-ing plant installed. There are a thou-sand and one little things in our line that, if you let us do them for you, will be done right—and you are judge and jury.

Page from Booklet Issued by Barrett Hardware Company. Actual Size, 21/2 by 51/2 In.

size, is shown herewith. As implied in the title, its purpose is to jog the memory of the woman who has been housekeeping for years, reminding her of many things in the nature of "handy helps" which she should have to serve her comfort and convenience. It is also designed for the young couple who are just starting life together, telling as it does the necessaries of household equipment, and especially their cost, for in connection with the alphabetical list given, prices are mentioned invariably. In this connection recipients of the booklet are reminded that while the prices are attractive. quality is never lost sight of, and the firm is always ready to stand behind any goods sold over its counters. The booklet is about $2\frac{1}{2}$ x $5\frac{1}{2}$ in. in size, and on every page, in addition to the alphabetical list of articles, there is something

said about special lines or departments, such as the Barrett shop, Builders' Hardware, Enameled Ware, Washing Machines, &c. "If It's from Barrett's It's a Bargain," confronts the reader on every page of the booklet.

THE GEO. F. EBERHARD COMPANY, formerly at 12 and 14 Drumm street. San Francisco, Cal., but since the fire of April 18, 1906, at the Barker Block, Berkeley, has taken a long lease of the premises at 330-332 Fremont street, San Francisco. The place is being fitted into offices and sample rooms for the company, and will be ready for occupancy before September 1. The floor space is 50 x 68 ft., with 24 double windows fronting on clear exposures east and west, affording display rooms which will show goods to the best advantage. The company is also installing one of the largest fireproof vaults for samples, records, &c., in the city. It will have a 15-in. reinforced concrete wall with 11 in, of dead air space. The clear inside space will measure 18 x 20 x 8 ft., giving 360 sq. ft. of vault floor space. The company was established in 1889 and acts as Pacific Coast sales agent for a number of the leading Eastern manufacturers. Geo. H. Eberhard is president; S. H. Strite, vice-president and treasurer, and J. W. Judge, secretary and manager.

THE LUCAS PUMP COMPANY, Dayton, Ohio, has succeeded to the business formerly conducted by C. O. Lucas & Co. at Greenville, and the plant has been removed to Dayton. The members of the old firm are associated with the new company.

JUGGLING A SALESMAN'S PRICES.

Demoralization in prices is often caused by buyers themselves. There are many among them who are never satisfied with a salesman's prices or the profit made on the goods they buy. A clear case of trying to get something for nothing.

BY FRED BRADFORD ELLSWORTH.

TAKEN as a whole Hardware buyers, as I have found them, are a pretty fine lot of men, but, like every other class, there are exceptions. There are some buyers who it would seem are employed for no other purpose than that of juggling the prices of a salesman. True, everybody is in business to make money, and a buyer is in it to make what he can for his firm, but when you skin a cat and expect him to live you present a physiological problem I am unable to solve.

A Juggling Exhibition.

The other day a salesman who has had years of experience on the road informed me of a case that will suffice as a good illustration. He called on a well-known jobbing Hardware house that he had once previously attempted to do business with and whose managers at that time blandly informed him that unless he agreed to give them the exclusive sale of his goods in their city they did not care to do business with him. The proposition was a preposterous one, because of the fact that his line was a staple one and in demand by all the jobbers.

His business kept on increasing, and as this particular firm had been unable to consummate such a deal as they desired to make with him and were buying his line of goods in the open market he thought it advisable to try and secure their business. It was not large, but it was business, and he knew that he had the goods and the prices, which is a victory won as a rule in the commercial world of to-day.

Placing a Contract (?)

The buyer (a new man) greeted him cordially, expressed regret at his unfortunate previous attempt and a willingness to do business with him. Not being in the market just at that time the buyer suggested that if prices were satisfactory he would make a contract with him for six months. The salesman quoted prices considerably below the market on a given quantity of the The buyer accepted, and handed him one of those beautifully printed contracts that would bring tears to glass eyes and cause a corpse to sit up and take notice. This brilliant literary effort stipulated that the salesman must meet any decline in prices that the buyer might receive. He refused to do this, but agreed to give them the benefit of any lower prices his firm might make in that city during that period. The buyer accepted, with the understanding that if the prices were not acceptable he would have the privilege of cancelling the contract. The salesman closed the deal, for he desired to procure this firm as a customer and made the concession in order to get them to handle the goods.

Buyer Gets Busy.

Mark the results and the tactics pursued by this firm in juggling the prices they now had. In a few days the buyer for the jobbing house wrote to the salesman's firm that they had been quoted lower prices than contained in the contract; that there had been a break in the market and they wanted a new price.

The manufacturer replied that he was overcrowded with orders, but if the house was in the market for goods and would send specification of just what was required, it would be considered. Instead of complying with the request, as business courtesy demanded, they asked what bearing a specification would have on the manufacturer protecting their contract against a decline as he agreed to do, which he did not, except so far as a decline in his own prices in that city was concerned. If the manufacturer would make lower prices they would make up a specification.

The manufacturer's answer was that while he knew that the market had been somewhat disturbed he was receiving large orders from that city at better prices than quoted this jobbing house. If, however, they would specify just what they needed he would go over the matter carefully, and if advisable reduce prices and notify them promptly. He also impressed upon them the fact that in no case had he shipped goods to the city at a lower price than specified in the contract, but in all cases a higher one.

Contract Cancelled.

The buyer was obdurate. He would not send a specification of what he required, and insisted that he had much better quotations from other sources; also intimating that it was not his desire to stipulate price at which the goods were to be settled for; only upon receipt of lower prices would he enter order. A few days later the buyer wrote that unless the manufacturer agreed to reduce prices to certain figures he could return the contract. The manufacturer acquiesced, informing the buyer that his proposition did not meet his approval, for he could sell all the goods he could make at better prices.

2 Per Cent. Cash and 5 Per Cent. Commission.

Witness the modus operandi of the buyer now. sent out fictitious specifications to different manufacturers requesting prices on the same. Evidently none of the replies were as favorable as the price in the contract he had cancelled with the first manufacturer. Then he wrote a certain manufacturer saying he was in the market for the same goods to be specified for in a certain time and offering to enter an order at the same price, providing the manufacturer would agree to allow him a commission of 5 per cent., besides 2 per cent. cash discount the 10th of the month following date of invoice. This manufacturer immediately declined the offer. From a practical business standpoint a 2 per cent. cash discount on a bill of goods that might run 40 days did not appeal to him, and 5 per cent. commission besides he could not countenance.

Evidently the buyer after much manipulation of prices and maneuvering succeeded in placing a contract, and no doubt as soon as placed began to lay plans to compel, if possible, a still further reduction. At the same time, fearing to be cut off entirely from the opportunity of doing business with the first manufacturer, he wrote him that he had occasion to figure that day with a large concern, but was unable to interest it, the company stating it had lower quotations direct from the manufacturer.

Juggler Turned Down.

The manufacturer, who had been kept fully posted by his competition after his first unsatisfactory dealings with this jobber, wrote and told him plainly that he did not think his condition would be improved by trying to do business with him further, and that no such prices as he spoke of had been quoted.

Verily the ways of some buyers are wise (?).

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., states that it will not be crippled in the least as a result of the fire which took place in one of the company's storehouses on the 19th inst. This building was one of four warehouses occupied by the company, and the quantity and variety of goods stored in it was not large. The goods also were mostly out of season. The bulk of the company's stock is carried in its two main buildings, one at Fourth and Washington avenues, which is referred to as absolutely fireproof, and the other at Main, Ashley and Second streets, practically fireproof, both buildings being fully equipped with automatic sprinklers. The company's damaged stock was well insured and the only annoyance suffered was the adjustment of fire loss and ordering up a few new goods.

The Bolt Clipper business of Allen-Randall Company, Springfield, Mass., has been sold to H. K. Porter, Everett. Mass., manufacturer of Easy and New Easy Bolt Clippers, to whom all orders for Allen-Randall Clippers and correspondence regarding same should now be addressed. Allen-Randall Company will continue the manufacture of Blacksmiths' Tongs and specialties.

Hardware Window Display

Twenty-first Article.

METHODS OF A NEW ENGLAND HOUSE.

R EADERS of The Iron Age have from time to time had opportunity to examine window displays of the Union Hardware & Electric Supply Company, Providence, R. I., several of which have been reproduced in our

has also furnished us with descriptions and illustrations of various pieces of window furniture which it has devised and keeps on hand for use in making up displays.

The Paint window is trimmed with bunting which is used more than anything else to furnish color and background. It is found to be especially satisfactory, as

Use of material, and looks well from the outside.

Bunting. Some material suggested for this purpose is so thin and flimsy that it will not cover and

cannot be draped effectively.

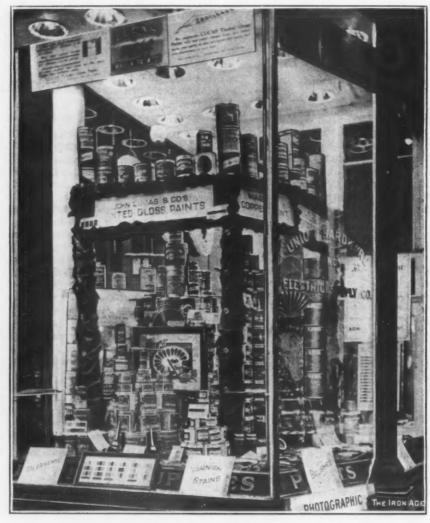


Fig. 1 .- Paint Window of Union Hardware & Electric Supply Company.

columns. By courtesy of this enterprising house, which does a large jobbing and retail business, we are able to

Fig. 2.—Post Used in Paint Window, with Sockets for Electric Lights.

Fig. 3.—Method of Constructing Cross Pieces in Paint Window,

present herewith the reproduction of a photograph of a Paint window recently installed, and give some details regarding its construction. At our request, the company The center of the display does not of course occupy a permanent place in the window, but is erected for the occasion. The posts used, as shown in Fig. 2, are about

4 ft. apart and consist of two halfround circles, 5 ft. long and 6 in. wide, jointed together, with sockets for electric lights running up and down as indicated. As the com-

pany has an electrical department it can use electric lights freely in its trims. By drawing on stock these

can be put in temporarily almost anywhere, and they add greatly to the effectiveness of all displays. There are 36 extra electric lights on posts and cross pieces in the present window.

At the top of the posts already described is a light framework, put on temporarily, as shown in Fig. Fig. 4.—Square Post for Occasional Use.

3, and pleated with orange bunting, with a border of black bunting puffed. The center of the cross piece is occupied by show cards, while color cards, brushes, &c., are scattered



around in various parts of the window. The cans of Paint have bright labels of various colors, which add to the attractiveness of the display.

Ingenious Window Furniture.

The following illustrations in this article show various pieces of window furniture which the company keeps on hand and finds useful in connection with different dis-

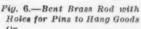


Fig. 5 .- Oval and Rectangular Steps

plays. Fig. 4 is a post 4 ft. high and 4 in. square, with an enlarged top or taper head. It may be effectively used as a stand to display something on, or with a large electric light on top and small articles, such as Padlocks or Machinists' Tools, fastened on the sides,

Fig. 5 represents stepped stands used to display







7. -- Half Circle Stand Fig. Made in Different Sizes.

goods on. The steps are about 6 in. high. The bases of these stands are 36 in. wide by 18 in. deep, the second steps are 24 x 12 in. and the top steps 12 x 6 in.



Fig. 8.--Wooden Oval for Use in Back Win of dow.

A brass nickel plated rod, bent into the form of a half circle, is shown in Fig. 6, with holes bored at 6-in, intervals, into which brass escutcheon pins are driven. This is convenient to hang Razors, Scissors or small Tools on when placed in the front of a window. Other devices are shown in Figs. 7 and 8, the former being a half circle, which is made in several sizes and is adapted to different kinds of trims, and the latter a wooden oval, 24 x 18 in. in size, used in the back of the window. The company's windows have mirror backs, but false backs are used often-

times to fasten goods on and carry out color schemes.

DISPLAY BOARD IN SHOW WINDOW.

THE unique display board reproduced herewith for a considerable period of time occupied a conspicuous place in the show window of M. E. Gale, Angola, N. Y. The goods in the window were changed a number of times, but the board continued to be the center of attraction. The board was 4 ft. wide by 7 ft. high. Many persons tackled the job of transcription, but exceptionally few were able to read the matter all the way through and call the Hardware substitutes for words by their right names. The board was intended to read as follows:

Stop, Brace up. Get in Line and read a few Plane facts. My Rule is to give Awl a Square deal. Staple goods at Hammer-ed down prices. No Leader-s to Spring, Butt always on the Level. Brush up, File in, don't put Butt always on the Level. Brush up, File the Arry my a Damper on a Reel good thing by Set-ing back. Try my Washers. Not a Bit of trouble, the best you ever Saw. You Oli Can see a Butcher Saw, but it's no Snap. Pull yourself together and crack these Nuts. A Well Bucket. yourself together and crack these Nuts. A Well Bucket, did you ever see one sick? A Sad Iron, did you ever see one glad? A Cutter, but not to ride in. A necessary Vise, and did you ever see a Spoke Shave? Well, Rubber, Stick until you Die. I don't Shade from the regular Stick until you Die. I don't Shade from the regular Scale. Don't try to put the Hook into me, I don't Chalk

up. Now, if you are the right Caliper, you will Divide your trade with me. Do you Catch on? Now, don't let this Tacks you. Here is my Card. Ring me up.

The Door Stop used to represent the first word of the announcement as above is not clearly shown in the



Display Roard in Show Window of M. E. Gale.

illustration. It occupied a place in the extreme upper left hand corner of the board.

WILCOX, CRITTENDEN & CO.

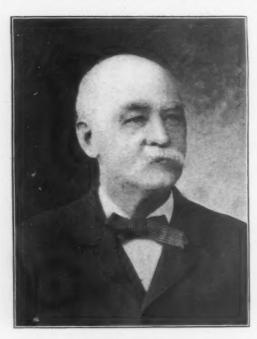
ILCOX, CRITTENDEN & CO., Middletown, Conn., have just issued their new catalogue No. 60, a substantial cloth bound edition of 336 pages, referring to their extensive line of Marine and Awning Hardware in brass and wrought, malleable and cast iron. Besides many special articles of interest to shipbuilders in general the company illustrates a number of specialties applicable to motor boat construction and equipment, for which the demand has increased rapidly in recent years. It will be remembered that the company's plant was visited by a fire a month ago, which gutted its office building and caused considerable damage in some other departments. Fortunately the company's facilities were such that it could continue business without serious interrpution, and announcement is now made of rapid progress toward reconstruction, while the service of customers has gone on almost without any delay. As the company operates its own brass and iron foundries, galvanizing and tinning departments and forge and machine room, all fitted with improved modern machinery. it is enabled to manufacture brass and iron products from the raw material and to machine and assemble the parts and finish the goods on its own premises. It also does a heavy jobbing business in iron and brass castings and drop forgings.

The McKinley Hardware Company has increased its capital stock from \$10,000 to \$15,000.

DEATH OF NATHAN R. DAVIS.

Nathan R. Davis, senior member of N. R. Davis & Sons, manufacturers of sporting firearms, Assonet, Mass., died suddenly at Oak Bluffs on the 14th inst., aged nearly 79 years. Mr. Davis was born in Somerset, August 18, 1828. At the age of 19 he entered the works of the Dean Cotton & Machine Company, in Taunton, Mass., where he learned the machinist's trade, remaining three years.

His first work as a master mechanic was with George P. Foster & Co., Taunton, making rifles by hand. Two years afterward he entered the shops of the Colt Bristol Company in Hartford, Conn., where he acquired a general knowledge of the gun business. He declined an offer to join in the establishment of a branch of the Colt's business in London, England, and went to Providence, where he was employed by J. R. Brown. During his service with Mr. Brown, the latter invited him to



NATHAN R. DAVIS.

unite with him in an enterprise which might have been 'known later as Brown & Davis instead of Brown & Sharpe Mfg. Company.

On July 1, 1853, Mr. Davis went to Assonet and formed a partnership with David C. Thresher, under the firm name of N. R. Davis & Co., beginning the manufacture of muzzle loading rifles. With an engine lathe run by water power for machinery and five men the firm manufactured about 150 rifles, which were sold in small lots to hardware merchants in New York City. In the following year the company moved to the old Thresher Building, where in 1858 they introduced the manufacture of the muzzle loading shotgun.

The business slowly developed until the outbreak of the Civil War in 1861 closed the shop for a while. Later in that year, under subcontract with the Federal Government, the firm manufactured parts of the Springfield rifled musket, the arm generally used throughout the war. In 1862, on the retirement of Mr. Thresher from the firm, Dr. Thomas G. Nichols became Mr. Davis' partner. The plant was enlarged as the war progressed, employing 100 men and running day and night.

On May 19, 1864, the gun shop was destroyed by fire, probably due to an incendiary. The loss was total, there being no insurance on the plant. But the firm had established valuable credit, and was able to rally and re-establish itself. Operations were resumed in the old Nichols & Sampson store, where, after a short time musket parts were turned out as before. By the end of the war the shop had finished, among many other parts, 600,000 rear leaf sights.

The rim fire breechloading double guns were first made in 1866. Later came the center fire top action gun,

which was improved from time to time. In the winter of 1873-1874, the business of N. R. Davis & Co. was removed to the building formerly occupied by the Assonet Machine Company. This building was much enlarged some years ago and refitted to meet requirements. Dr. Nichols died in 1883, and in the following February Mr. Davis admitted to partnership his sons, W. A. and N. W. Davis, who had since remained with him, the firm name being N. R. Davis & Sons. Besides these two sons. children of his first marriage, the deceased leaves a widow and a son by his second marriage, Rufus Davis.

U. T. HUNGERFORD BRASS & COPPER COMPANY'S NEW WAREHOUSE.

THE U. T. HUNGERFORD BRASS & COPPER COM-PANY, Pearl and Park streets, New York, has nearly completed another warehouse for storing stock, known as warehouse No. 2, at 486-492 Pearl street, almost opposite the main building, and which is now partially occupied. It has been substantially built and especially for the company's particular requirements. There are two stories and basement, with over 20,000 sq. ft. of space. The walls on sides and back are solid and untroken by windows or doors, but there is an immense skylight above, 30 x 75 ft., which affords a fine natural light. The building occupies a site 100 x 127 ft., and a special feature of the construction is that teams can drive into the building and load or unload directly where the heavier stock is stacked against the walls, all of which space, from its unbroken character, is available, make a turn, and easily get back to the street by a return paved roadway. The second floor is lighted from the same skylight, the space being unbroken from street floor to roof. Portions of the building intended for shelf and similar goods are partitioned off and glazed to afford an abundance of light. As now arranged, goods can be handled with greater speed and much unnecessary handling is avoided. There is an elevator 5 x 15 ft., long enough to carry Tubing, cases of Copper Sheets, &c., to the upper floor. The company estimates that the new building adds a possible storage capacity of 5,000,000 lb. to the stock carried in the main building, which is much larger and of comparatively recent construction, having been occupied but a few years.

DEATH OF JOSEPH T. FARRINGTON.

OSEPH T. FARRINGTON, one of New York's oldest Hardwaremen, and in his seventy-ninth year, died August 11 at his home in Montclair, N. J., where he had lived for about 15 years. His death was mainly due to diminished vitality, incident to old age. He was born in October, 1829, in New York, and educated in the public schools. Early in life he began his business career as a boy in the house of Johnson & Abrams, the business of which was originally established at 443-445 Broadway in 1823. Eventually Mr. Farrington won his way to positions of responsibility and was taken into partnership, the firm name becoming J. C. Johnson & Co., then located at 32 Howard street, near Broadway. After Mr. Johnson's death in the early 70's Mr. Farrington conducted the business in his own name, and later moved it to 188 Grand street, and in 1900 to 179 Grand street, where it is still carried on.

Mr. Farrington was a gentleman of the old school, reliable and true. He was universally esteemed for his gentleness of character and probity in business affairs. He was a member of the Twenty-fourth Street Methodist Church in New York, attending it until his removal to Montelair, filling various positions, including that of superintendent of the Sunday school. He was the oldest member of Montelair Lodge, No. 144, F. and A. M., and its chaplain at the time of his death. He is survived by three daughters, his wife having died several years ago.

THE WEBBER HARDWARE COMPANY, La Porte, Ind., wholesale and retail Hardware, Stoves, Implements, Paints, Sporting Goods, &c., has reduced its capital stock from \$30,000 to \$10,000.

Business Methods in a Builders' Hardware Store.*

THIRD ARTICLE.
Bidding on Jobs.

In estimating the cost of Hardware required for a building, the plans and specifications are obtained from the builder or architect. The estimate is made on sheets

A Block of 72 Bins

against the wall is provided for jobs in hand, each opening being about 12×20 in. in size and 18 in. deep. The upright divisions are stationary, but the shelves are laid loose on cleats nailed to the uprights, so that two or more bins can be thrown into one, if necessary, to accommodate the goods for any one job. A metal bound cardboard disk, shown in Fig. 9, with name of job written on

FI	TES MADE ROM CT'S PLANS	Robert A. Reynolds & Son, JOBBERS AND RETAILERS OF Builders' Hardware, 270 Main Street, Stamford, Conn.,		<i>l</i> 1	enk
Dv.	fras	Sreenmah, Com.	A. G		100
Quantity	List No	Description A V. Cros	Finish	me	ur
		Front Door L. H. 2 1/4" this	1		
V	1	Butts 5x5	XX80	1	33
only	750-	AF Lock AY22 X Chester x 156 Pasco V " X	FX 80	5.	10
only	404	Chester Plate 0	A/22	1	51
" "	502	Pasco " K Rush Button chester o	FX80 Ayzz	1	28
			1	8 11	78

Fig. 8 .- Estimate Sheet.

of buff paper, on which are first written the date, name and location of building and name of architect and builder, as shown in Fig. 8. The estimates are made for each opening, doors, windows, &c., followed by all items detailed for the opening. The items are priced at the cost to the merchant, and to the total of the entire estimate is added the percentage of profit. The gross amount of the contract price is then submitted to the builder or architect for acceptance or rejection. This estimate is a private document and is seen by no one outside the store.

Checking on Estimate Sheets.

After the contract has been accepted the items are checked against stock on hand, the different checkings, shown in Fig. 8, having the following significance:

means that goods are in stock.

the dot above the check mark indicates that the goods have been taken from stock, entered on the stock cards as sold, and put in a bin provided for the goods designed for this par-

o signifies that the goods are not in stock, but have been ordered.

means that the goods have been received from manufacturer and put in the bin.

*This series of articles, begun in our issue of August 15, relates to the business system adopted in the store of Robert A. Reynolds & Son, Stamford, Conn.

it. is tacked to the shelf above the bin containing the goods.

Ordering Goods for Jobs.

After all goods not checked as being in stock have been ordered from manufacturers a copy of the estimate sheets is made in typewriting on white sheets, with same headings and information, check marks, &c., as contained



Fig. 9 .- Metal Bound Disk for Bins.

on buff estimate sheet, Fig. 8, but with no prices except the total contract price placed at the end. This copy is known as an "active order," and completes the order to the time immediately after the goods are ordered from manufacturer. The buff estimate sheets are filed away and the active order sheets are put in loose leaf binder. This has a blank page at back, on which each job is indexed by number, &c., as follows:

283 Brooks Residence, Greenwich, Conn.

Delivery of Goods.

This brings us to the point where the furnishing of goods begins. The goods are taken from the bins and cross checked, as are also those taken from the shippers' cases. The latter are examined by calling back from the labels on the packages, in so far as to the opening for which they are intended, detail or trim and finish, but the packages are not opened. Goods for each opening are wrapped up together and so marked. The foregoing procedure is gone through with in case of partial or complete delivery. It is not unusual that one or more items ordered from manufacturer are delayed. Such items are usually scattered through the active order sheets, and for convenience in locating them a line is drawn with blue pencil down the center of each page through the items checked as delivered, thus bringing out prominently the tardy ones. When the order has been filled complete the sheets are put into an inactive binder, Indexed, &c., so as to be referred to, especially if additional goods are ordered for the job, which is often the case. An invoice is not sent to the purchaser until the order is completed, this then indicating that the merchant has completed his contract in furnishing the

(To be continued.) ***

A NOTABLE EXHIBITION OF PUBLIC SPIRIT.

BUTLER BROTHERS, through T. B. Walker, have Minneapolis Commercial Club the \$40,622.50 subscribed by the business men of Minneapolis, Minn., when negotiations were on for the location of Butler Brothers' new house in that city. Butler Brothers have paid this amount to Mr. Walker in cash and increased rental, and Mr. Walker has handed his check to the Public Affairs Committee. In locating houses at the several jobbing points from which they operate, including Chicago, New York and St. Louis, as well as Minneapolis, Butler Brothers have always made it a policy never to ask or accept anything that could possibly be construed as a bonus. When the negotiations for a building were being carried through the Public Affairs Committee, on difference of views arose between the and T. B. Walker, who was to erect the building, regarding the rental charge. The firm had counted on securing the building on a certain rental basis. Mr. Walker did not meet their views, the difference being about \$60,000. As the negotiations were in its hands, the committee, anxious to secure the big house for Minneapolis, took it up with the business men of the city without Butler Brothers' knowledge. Mr. Walker made concessions amounting to about \$20,000, the rest of the money being quietly subscribed by Minneapolis business men and turned over to Mr. Walker. The building, an exceptionally large and imposing structure, was completed and occupied several months since.

The position taken by Butler Brothers in this matter will be recognized by the trade as a noteworthy exhibition of public spirit on which they are to be commended and congratulated.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

WHITMAN & BARNES MFG. COMPANY, Chicago: Illustrated catalogue No. 64, referring to the company's large line of Lawn Mowers. To the machines made last year have been added three patterns, the Diamond Special, a ball bearing, five-knife Mower, the W. & B. automatic ball bearing, and the New Norka, ball bearing Mowers.

KRAEUTER & Co., Newark, N. J.: Catalogue of tools made by the firm, including several new lines of Chisels, Bearing Scrapers, Cotter Pin Extractors and special tools for automobile repairing and manufacturing.

CASSADY-FAIRBANK MFG. COMPANY, Chicago: Annual general catalogue, with list prices and weights, referring to a large and varied line of light Hardware specialties, particularly stamped steel products, such as Kitchen Sets, Cake Turners, Mincing Knives, Clothes, Towel and Display Racks, Coat and Hat Racks, Screw Drivers, Stove Lifters and Pokers, Nut Cracks and Picks, Curling Irons, Tracing Wheels, Button Hooks, &c.

COOPER & McKee, 119 Lorimer street, Brooklyn, N. Y.: Illustrated price-list of Stove Boards.

L. S. STARRETT COMPANY, Athol, Mass.: Catalogue No. 18, covering the company's extensive line of fine mechanical tools, including numerous new tools, new sizes, &c. The book contains 232 pages of convenient size and is profusely illustrated and carefully arranged and indexed. An advance circular calls attention to the additions and changes in the catalogue.

COLLMER BROS., South Bend, Ind.: Illustrated catalogue and price-list of tool specialties, including Pipe Cutters, Cutter Wheels, &c., Lathe Dogs, Emery Wheel Dressers and Dresser Cutters, Sprockets, Hubs, &c.

BUTLER BROS., Chicago: Fall edition of "Our Drummer," catalogue No. 626, covering the general lines carried by the concern and referring especially to seasonable lines for which merchants are now in the market. Of noteworthy interest are insert pages headed "What We Are and How It Concerns You," which contain a sketch of the business and a statement of the methods under which it is conducted, together with views of distributing and sample houses on a map showing their location.

PARKER WIRE GOODS COMPANY, Worcester, Mass.; Illustrated supplement to catalogue No. 2, referring to Wire Hardware and specialties.

AMERICAN STOVE BOARD COMPANY, Chicago: Pricelist of Stove Boards, with illustrations of designs offered, some of which are shown in actual colors.

RACINE BOAT COMPANY, Racine, Wis., and 68 Broad street, New York: Illustrated catalogue of Gasoline and Steam Launches, Sailing Yachts, Rowboats, Canoes, Hunting Boats, &c. The Motor Boats are in various types, in 40, 35, 30, 25, 21, 18, 16 and 14 ft. lengths. There are also Auto Boats 26 and 22 ft. turbine; Shallow Draft Boats, 21 and 18 ft., and Stern or Side Paddle Wheel Motor Boats, built to order only, of any desired length and beam.

REQUESTS FOR CATALOGUES, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM F. J. BREYLINGER, Monticello, Wis., who has commenced the erection of a new store.

FROM E. MAIER, Chrisney, Ind., whose store has been destroyed by fire. Mr. Maier's line includes Shelf and Heavy Hardware, Stoves, Agricultural Implements, Paints and Oils and Harness.

The stock of the Schroeder Hardware Company, Neillsville, Wis., has been sold to John D. Murphy of that city, who will conduct the business under the name of the Cash Hardware Store. He will add materially to the line and extend the business.

Hodge & Homer Company, handling Builders' Hardware and Mechanics' Tools, has removed from its former location, 47-49 W. Randolph street, to 58 and 60 West Madison street, Chicago, where it occupies a four-story and basement building, 40 x 190 ft.

The Trades 100 Years Ago.

Fifth Article.

The following article with the accompanying illustration is taken from the "Book of Trades, or Library of the Useful Arts," which was published in 1807 by Jacob Johnson, London, and at that time for sale in his bookstores in Philadelphia and Richmond, Va.

The Wheelwright.

The business of the wheelwright consists in the making of the woodwork for wheels, in putting the parts together and in fixing

A wheel is composed of several parts, as the nave, which is the centerpiece; the spokes, which are inserted at one end on the nave, and at the other into the fellies, which make up the outside rim. These three parts constitute a wheel, but for the sake of giving strength to the whole some ironwork is used. This we shall describe in its proper place.

The nave is that short, thick piece of wood in the center of each wheel which receives the axletree, of which one is represented standing on its end in the right-hand corner of the plate, with holes ready to receive the spokes, which are made to fit in accurately. When the spokes are fitted in the nave the rim or fellies are next put on



the spokes. Each felly is of sufficient length to receive two spokes, so that if there be

twelve spokes in a wheel the rim consists of six pieces or fellies.

The nave is bound at each end on the outside with strong iron hoops called nave bands; within-side also there is a ring of iron, called the wisher, to prevent the hole from wearing by the friction of the axle. To the outside rim or fellies is an iron tire fastened with very strong nails or spikes. The parts of the tire are made red hot before they are put on the wheels, in order that they may burn a small depth in the wheel, or at least all that roughness which might hinder

it from lying flat with the wood; besides, by being in this state they may be easily bent, so as to conform most accurately with the curve of the wheel. Another advantage is that iron when hot expands, and as it becomes cold it contracts into shorter lengths; and as the tire of the wheel contracts it must have a tendency to draw the several parts of the wheel closer together. To give the man power over his work the wheel is placed in a sort of pit made in the floor, on the sides of which the nave rests, so that little more than half of the wheel stands above the surface. The wheelwright in the plate is represented putting on the tire of the wheel, and the smoke is made to pour forth from the burning of the wood. The large pincers at his feet enable him to bring the red hot iron from the fire and place it on the wheel. The axe resting against the other wheel has a bended blade, and is used for hollowing out the fellies.

By thus scooping out the wood the grain is often so cut and injured as to weaken it in a very great degree. To remedy this a method has been invented of bending timber into a circular form, so that the whole rim of the wheel consists of not more than two pieces, which are cased with the tire in a single piece. By this mode of construction the circumference of the wheel is everywhere equally strong, and much more durable than wheels made in the usual form, though not more than half the quantity of wood is employed.

Wheelwrights in the country are the makers also of carts and wagons; the wood they principally use is elm and some oak. Their business is a very laborious one and requires that no lad should be brought up to it who does not possess a strong constitution. A journeyman will earn from a guinea to thirty shillings a week.

Elm, which is used by the wheelwrights for axletrees, is also much in use for chopping blocks, not being liable to chip. Carvers make use of it for foliage and other curious works of fancy.

HENDRICKS' COMMERCIAL REGISTER.

THE SAMUEL E. HENDRICKS COMPANY, 74 Lafayette street, New York, continuing its yearly custom, has just issued the sixteenth annual edition of "Hendricks' Commercial Register of the United States." This book of nearly 1300 pages, each 7½ x 10 in., bound in stiff cloth covers and containing 304 columns of index, is intended particularly for buyers and sellers, although useful for circularizing of diverse character. Its purpose is to cover particularly the fields of architectural, mechanical, engineering, contracting, electrical, railroad, iron, steel, mining, mill, quarrying, exporting and kindred industries, including the manufacture of Hardware and House Furnishing Goods. It is said to contain over 350,000 names and addresses, three columns to the page, and 15.000 business classifications. It affords extensive lists of manufacturers of and dealers in an exhaustive line of materials and apparatus, from raw material to the manufactured article.

F. J. Carney & Co., Astoria, Ore., have lately commenced the cannery and fishermen's supply business, handling Rope, Twine, Netting, Oars, Anchors, Chains, &c.; also Launch Supplies, Oll Clothing and Rubber Boots and Boat Building Material. F. J. Carney, president and manager, was formerly associated with Fisher Bros. and Fisher Bros. Company for a period of 17 years.

MISCELLANEOUS NOTES.

Yellow Jacket Blue Steel Square No. 18 B.

The Southington Cutlery Company, Southington, Conn., New York office 42 Murray street, is offering a steel square lighter and easier to carry than the regular 24-in. square. It has an 18-in. body and 12-in. tongue and a beautiful blue, anti-rust, oxidized, gun metal finish, with yellow markings. The square is designed for carpenters, cabinet makers, &c.

Becker's Iron-Smooth.

The Lorenz Mfg. Company, 35-37 Frankfort street, New York, is marketing Becker's iron-smooth, one of various household articles manufactured by it. Iron-smooth is a purely vegetable compound ingredient for mixture with starch, for laundering processes, producing, it is asserted, a soft white gloss, which is a characteristic of good laundry work, and without injury to hands or material. By it the starch is made pliable, so that it will effectually permeate the linen texture, preventing the starch from sticking to the sad iron and the iron from sticking to the linen. With this preparation it is possible, we are advised, to use a much hotter flat iron without risk of scorching the fabric, and either a high gloss or domestic finish can be produced.

Snow Flake Ice Cream Freezer.

The Snow Flake Mfg. Company, 225 Fifth avenue, New York, has just put on the market the Snow Flake ice cream freezer, here illustrated. The leading features of the freezer are small size and compactness, moderate cost, ease of operation, small amount of ice required and relatively large volume of cream frozen at short notice. These characteristics make it especially handy for individuals or small families, especially in apartments where space is a factor. It consists of a box made of galvanized iron, the extreme outer dimensions of which are 61/8 x 53/8 x 51/2 in., weighing complete 13/4 lb. There is a bead formed in the metal on two opposite sides of the body and on the inner side there are metal strips soldered on, half way down, to make a bearing for the center pinions at each end of the cream cylinder, which is 4% in. long and 4% in. diameter, with a capacity of about 1 quart. At one end of the can there is a round cover with beaded edge, fitting friction tight. On the outer side of the bottom of the can a pinion 34 in, long is soldered on, and on the cover at the opposite end a hollow tube is similarly attached, which contains the half of a round metal rod cut lengthwise so that by inserting the detachable crank through side of box the cylinder, with contents, can be revolved.



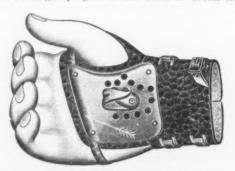
Snow Flake Ice Cream Freezer and Parts.

cream, water ice or other material to be frozen has been poured into the can and the cover snapped into place the can is dropped into position, the crank slipped through the opening in side of box and into the tube for turning. Then with a moderate quantity of finely cracked ice mixed with rock salt the can is ready for freezing. Before pouring the material to be frozen into the cylinder, a two-wing metal dasher, which occupies but little room, is pivoted at the bottom, the mixture poured in and the cover put on which likewise centers the dasher. After the mixture of ice and salt is packed around the cylinder, it should be revolved about 3 min., when the box can be put in the refrigerator if one is

available, until the cream is wanted, or it can be served directly from the freezer. The 1-quart size here described is now ready, and the company expects to have 2-quart and 4-quart sizes on the market in September.

Clark's No. C Palm Hook Husker.

The palm hook husker shown herewith is offered by R. F. Clark, 100 State street, Chicago, who is putting it on the market for the fall. The plate is bent up, forming a brace in the palm of the hand to relieve the strain, prevent chafing of the hand and make a grip on the ear when grasping it in the hand to break it from



Clark's No. C Palm Hook Husker.

the stalk. It has the advantage of a large palm plate with 15 holes to set the hook in and with the palm leather strap over the thumb to hold the plate firmly. It also has a cinch lace adjustment and a new shaped wrist band cut flaring, which raises the back part of the band above the wrist joint giving freedom to the joint and a direct pull for the hook.

Champion Double Acting Door Hinge.

The Standard Mfg. Company, Shelby, Ohio, has recently added to its line the Champion Double Acting Spring Door Hinge represented in the accompanying illustrations. Fig. 1 shows the Hinge adjusted to floor and door and indicates the neatness and smoothness of its appearance; Fig. 2 shows it with casing or finish plate



Fig. 1.—Champion Double Acting Door Hinge.

removed revealing the interior construction. The hinge is secured to the lower corner of the door with a floor plate screwed to the surface of the floor. It is detachable at the floor plate, so that the door can be taken off without removing the latter from its place. The application of the hinge is said to be an easy and simple matter, requiring only a straight cut in the door the length and depth of the hinge, with the short extension at the end let in flush at the bottom of the door. One long wood screw near the heel secures the hinge to the door, having a machine screw head threaded into the top rib

of the hinge. This screw is turned by using the hinge as a handle until it comes up tight. Two wood screws are used at the opposite end to hold the hinge firmly in place. taking out one screw only, as shown in Fig. 2, the other end is secured by tongues which enter slots in the finish plate. In the floor plate is an adjustment for lining up the door with the opposite jam or with the opposite door when in pairs. The adjustment is accomplished by loosening one of the headless screws shown in the floor plate and tightening the opposite one, which will bring the door to exact alignment without disturbing any of the screws that hold the floor plate to the floor. The weight of the door is carried on ball bearings directly on top of the pivot post, reducing friction to a minimum and allowing the door to swing freely. The location of the bearings prevents any water or grit get-

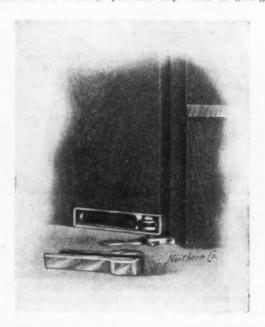


Fig. 2.—Champion Double Acting Hinge, Interior View.

ting in, and destroying their smooth operation. The tension of the spring is adjusted to suit the swing of the door by the tension nut shown at the end of the spring (Fig. 2). The plunger which controls this is guided by the inside of the spring, which acts as a cushion against the side motion of the plunger at each swing of the door, eliminating to large degree any objectionable noise. The manufacturers state that the spring contains only the best material and workmanship and is calculated to meet all demands in the highest class of builders' Hardware.

The Ansonia Nail Clipper.

The H. C. Cook Company, Ansonia, Conn., is offering the trade the nall clipper shown herewith. It is stamped from sheet metal and has two cutting jaws, actuated by a powerful leverage. A nall cleaner, attached to the



The Ansonia Nail Clipper.

clipper, serves as a locking device to hold the jaws together when not in use. The clipper itself is about 2 in. in length, and when closed has no sharp corners which might wear the pockets. The manufacturer claims that the tool is a practical manicure, which makes a good, clean cut and does not tear or pull the nail. It has been brought out to meet the demand for a cheap yet practical clipper, and can be supplied packed 12 in a neat pasteboard box, or mounted in a revolving disk, with neat metal base and pedestal.

The Wayne 1908 Electric Washing Machine.

The Wayne Mfg. Company. 124 Sidney street, St. Louis, Mo., is putting on the market the washing machine illustrated herewith. It can be operated by electric, steam, water or hand power. As shown in Fig. 1 the electric motor is operated by the use of the electric light



Fig. 1 .- The Wayne 1908 Electric Washing Machine.

wire. The flywheel is so located that when lifting the lid the flywheel remains stationary and the belt will not come off, as shown in Fig. 2; nor is the flywheel lifted when opening the lid. The machine is the same style and size as the company's regular rotary washer and is made of high grade Louisiana cypress. The tub is finished in the natural wood, being given a coat of shellac,



Fig. 2.—Arrangement of Flywheel and Lid of Electric Washing Machine.

followed by two coats of heavy coach varnish. The hoops are striped a green bronze, the gear wheel is green enameled and the gearing gold bronzed. Instead of using the extended stave leg, detachable legs are used, which obviates throwing away an entire machine should a leg be broken. The inside dimensions of the machine are $22\frac{1}{2} \times 11\frac{1}{2}$ inches.

Patent Sad Irons.

The Patent Sad Iron Mfg. Company, Reading, Pa., and 114 Fifth avenue, New York, is offering its Patent sad or laundry irons in a number of practical assortments and combinations, one of which, Household B, is here shown. The feature of these sad irons is the removable shell and cold handle, in connection with which there are two new forms of spring actuated gripping attachments for lifting and operating the heated irons. The Iron

proper is heated detached, and the handle and cover utilized to lift the heated portion and use it. Attached to the black enameled wood handle is a flat, curved steel body with a spring riveted at one end and free at the other, the spring following in shape the curve of the circular handle support. To grip the iron a slight thumb pressure recedes the spring so that releasing it permits the end opening to slide under the buttonlike head of bolt in top of iron, so it can be carried about: a cold handle and hot iron. The irons are highly polished and nickel plated and in form molded so as best to meet the varied requirements of laundry irons. With each set there is an accompanying sad stand shaped from one piece of heavy bright tin plate, with 3-16 in, corrugations. This stand is 61/2 in. long, 5 in. wide, with two lengthwise sections 1/2 in. from the edges and 9-16 in. high, which hold down a

sheet of ½-in. asbestos millboard, heavily coated with white wax, the latter serving to keep the irons clean, while the asbestos is a protection against heat. The Household B set, shown in the engraving, weighs, complete with stand, about 21 lb. The irons themselves weigh as follows: Flounce, 5½ lb., double pointed 4½ lb., each, pointed and straight back 4¾ lb., handle 1¼ lb., and stand 5 oz. The other sets, Perfection, Family A and Laundry A and A A and Premium sets, are variously sorted from the shapes shown, the sets containing two, three and four pieces, with cold handle and stand in each set. The flounce iron complete with handle for ironing ruffles, flounces and all kinds of dainty lingerie and wear, weighs 6¾ lb. The irons are guaranteed by the company.

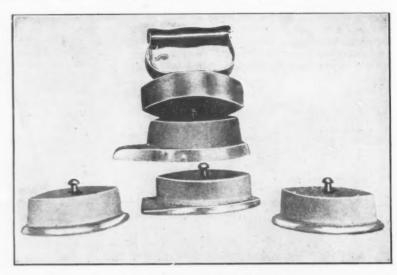
Nonexplosive Safety Apparatus.

The non-explosive safety apparatus here illustrated, designed for use on automobile and launch gasoline and



Fig. 1.—Flexible Double Guard Cylinder for Automobile and Launch Tanks.

naptha tanks, as well as in connection with tanks and cans of every kind containing inflammable or explosive fluids, is manufactured by the Universal Safety Tank & Can Company, 311 Wabash avenue, Chicago. Fig. 1 shows a style of the device used on automobile and launch tanks. It consists of a heavy brass cap fitted with a valve over the mouth on top, which is held in place by a spring. The cylinder attached to this cap is composed of wire gauze and netting of which there are three separate cylinders. The center one of these is composed of heavy wire netting and forms the structural supporting frame, while the inside and outside sections are of fine brass gauze netting. These form a fire guard which prevents fire from penetrating into the tank, but upon the



Patent Sud Irons for Household Usc.

application of heat to the vessel the gases formed will, if ignited, burn at the mouth of the apparatus without damage. An air vent is provided in the valve, the arrangement of which is shown in a cutaway section in Fig. 1. Should the tank be exposed to extreme heat the gases generated thereby would open the valve and escape without danger of explosion. A coupling for connecting the pipe line with the tank is furnished and has gauze fire guards to prevent flames from entering the tank through a leak in the pipe. Fig. 2 shows the application of this apparatus to an ordinary 5-gal. dispens-



Fig. 2 .- Nonexplosive Auto Dispensing Tank.

ing can. The spout is fitted with a guard cylinder, similar to the one above described, and is provided with a valve operated by a push stem as shown in sectional view of Fig. 2. It will be noted that the valve stem is protected by projection from the spout to prevent the accidental opening of the valve, in accordance with underwriters' requirements. The can is also furnished with the non-explosive safety device, the latest pattern of which has a valve lever extending across two and operated by the push pin in the spout. The spout valves and cylinders are all made of brass and are detachable and interchangeable. They are made to fit any opening with screw thread either on the inside or outside of the tank or can.

The Little Shaver Floor Scraper.

The accompanying illustration represents a floor scraper offered by the Contractors' Supply & Equipment Company, Chicago, Ill. The device is designed to supplant the old method of scraping floors by hand. A steady and even pressure is maintained on the knife blade by a



The Little Shaver Floor Scraper.

heavy weight block mounted upon the knife head. Though attached to the bearing hub the weight swings free and is not affected by upward movements of the handle bar. The scraper blade, 7¾ in. in length, is held in position on a faced angle at the front of the knife head by a bolted clamp plate and is easily removed for grinding or readjustment. Pinions projecting from each side of the bearing hub serve as axles for the 10-in. rubber tired wheels upon which the carriage is mounted. A piece of 1-in. pipe screwed into the rear shank of the hub forms the handle for moving the machine, and when pressed downward acts as a lever to raise the knife edge clear of the floor or other surface, when, at the end of the cut, it is desired to reverse the tool. It is, therefore, not necessary

to raise the wheels at any time to disengage the tool. The independent upward movement of the handle permits the machine to be worked close up to walls or other obstructions, for, as the scraper is drawn forward, the handle may be raised to a perpendicular position without affecting the knife head. Control of the cutting blade being exercised automatically by gravity pressure, little skill is required on the part of the operator to obtain satisfactory results. A bail handle attached to the weight block makes the tool easily portable. The machine is substantially constructed throughout, neatly finished and is furnished complete with a dozen knife blades.

Perfection Faucet Cushion.

Ohlerking & Sibley, 40 Dearborn street, Chicago, Ill., are the exclusive sales agents for the Perfection faucet cushion, one of which is here shown, attached to a kitchen faucet. It is made of white rubber, in two sizes, the larger of which is for a threaded faucet and the smaller



Perfection Faucet Cushion Attached to Faucet.

one for a smooth faucet. It is designed to prevent the chipping or breaking of dishes, when for any reason (rinsing, for instance) they are liable to get in contact with the unyielding metal. Where there is a good volume of water and much pressure the cushion also serves to confine the stream when under a full head and prevent unnecessary spread or splash.

PAINTS, OILS AND COLORS

Miscellaneous-
Barytes:
White, Foreign 49 ton \$18.50@20.5
Amer. floated
Off color
Off color \$\pi\$ ton 13.00@16.50 Chalk, in bulk, \$\frac{7}{7}\$ ton 3.00@3.25 In bbls \$\pi\$ 100 lb @ 3.35
hina Clay, Imported. # ton 11.00@17.5
obalt, Oxide 100 fb 2.50@ 2.60
Vhiting Commercial 39 100 fb 43@ 59
Gilders
Putty, Commercial 10 100 m
n bladders\$1.70 @1.85
n bbls, or tubs 1.20 @1,45
n 1 lb to 5 lb cans 2.65 @2.95 n 12½ to 50 lb cans 1.50 @1.90
Spirits Turpentine— 10 gral
Oil bbls
n machine bbls
Class
Cabinet
ommon Bone
Extra White 18 @24
Foot Stock, White12 @14
oot Stock. Brown 9 (@11
erman Hide
rench
rish
Low Grade
Gum Shellac— An the
Bleached, Commercial
Button
Diamond I
ine Orange
A. C. Garnet
3. A. L
Cala Button32 @33
O. C
N
V. S. O58 @59
Colors in Oil-
Black, Lampblack12 @14
Blue, Chinese,

		_
	Blue, Prussian 32 (336 B.ue, Uttramarine 13 (a16 Brown, Vandyke 14 (44 Green, Chrome 12 (a16 Green, Paris (a24 Sienna, Raw 12 (a15 Sienna, Burnt 12 (a15 Umber, Burnt 11 (a14 Umber, Burnt	
	White Lead, Zinc, &c	1
	Lead, English white, in Oil. 10% (210%)	1
	Lead. American White: Lots of 500 fb or over, in Oil @ 71/2 Lots less than 500 fb, in Oil @ 8	
	Lead, White, in oil, 25 fb tin pails, add to keg price 4 Lead, White, in oil, 121/2 fb tin	,
	pails, add to keg price @ 1 Lead. White, in oil, 1 to 5 lb	
	Lead. American. Terms: For lots 12	
	tons and over 14 e rebate; and 2% for cash if paid in 15 days from date of	
	invoice; for lots of 500 lbs, and over 2% for cash if paid in 15 days from date of invoice, for lots of less than	-
	500 lbs. net. Zinc, American, dry 5%@ 5½	1
l	Zinc, French: Antwerp, Red Seal, dry	
	Paris, Red Seal, dry	
ļ	Lots of 1 ton and over134/@13% Lots of less than 1 ton134/@13% Zinc, V. M. French, in Poppy Oil:	
	Lots of 1 ton and over11%@12%	
	Lots of less than 1 ton1216@12% Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades 1" 25 bbls., 2%; 50 bbls., 4%.	
١	Dry Colors— # 15	1
	Black, Carbon 64@10 Black Drop, American 314@8 Black Drop, English 5 @15	

-	
1	a to
	Black Ivory. 18 @20 Lamp, commercial 4 @ 6 Blue, Celestial 4 @ 6 Blue, Celestial 4 @ 6 Blue, Chinese 30 @33 Blue, Prinssian 28 @32 Blue, Prinssian 28 @32 Blue, Ultramarine 3½@15 Brown, Spanish ½@1 Carmine, No. 40 \$1.10@3 25 Green, Chrome, ordinary 3½@5 Green, Chrome, pure 17 @25 Lead, Red, bbls., ½ bbls., kegs. @7% Litharge, bbls., ½ bbls., kegs. @7% Litharge, bbls., ½ bls., kegs. @7% Litharge, bbls. %2 bls., kegs. @7% Litharge, bbls. %2 bls., kegs. @7% Litharge, bbls. %3 bls., kegs. @7% Litharge, bbls. %4 bls., kegs. @7% Litharg
on comments	Ocher, American It on \$8.50@16.00 American Golden 2½@ 3½ French ½@ 2 Foreign Golden 3 @ 4
	Orange Mineral, English
	American 3 @ 3¼ Red, Turkey, English 4 @10 Red, Turkey, English 7 @10 Red, Venetian, Amer. 9 100 fb \$0.50@1.25 English 9 100 fb \$1.15@1.60
-	Sienna, Italian, Burnt and Powdered 3 @ 9 Italian, Raw, Powdered 3 @ 7 American, Raw 1½@ 2 American Burnt and Pow'd 1½@ 2 American and Pow'd 1½@ 2
	American \$\frac{3}{2}\$ ton \$15.00\cappa25.00\$ Terra Alba, French. \$\frac{3}{2}\$ 100 fb. \$90\cappa 1.00\$ English \$\frac{3}{2}\$ 100 fb. \$80\cappa 1.00\$ American \$\frac{3}{2}\$ 100 fb. \$No. 1. \$75\cappa.\$90 American \$\frac{3}{2}\$ 100 fb. \$No. 2. \$\frac{3}{2}\$ \$\frac{3}{2}\$ \$\text{Umber}\$, \$T'key. But \$\frac{1}{2}\$ \$\text{Pow. 2}\$ \$\frac{2}{2}\$ \$\frac{3}{2}\$\$
	Burnt, American 114@ 2 Raw, American 12 @ 2 Yellow Chrome, Pure 12 @ 14 Vermillon, American Lead 7 @ 5
	Quicksilver, bulk

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General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the mar-ket as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or isobbors. jobbers.

Range of Price .- A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33 % and 10 per cent. discount.

Names of Manufacturers.-For the names and addresses of manufacturers see the advertising columns and also The Iron Age Directory, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a directory of the Iron, Hardware and Machinery trades.

Standard Lists .- "The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind— Columbian and Domestic	Louble Bit, base weights: First quality\$1.00@7.50 Second Quality\$6.50@6.76 Axie Greese See Grease, Axie Liron or Steel Concord, Loose Collar\$72@5 & Concord, Solid Collar\$72@5 & No. 1½ Common, Loose\$72@5 & No. 2 Solid Collar\$72@5 & No. 174 Com.	Hand— Polished, Brass	Expansion— Richards Mfg, Co
\$0.75; 2, 50.60; 4, \$1.00; 5, \$0.50. Fernald Quick Shifter, \$\psi\$ doz. pairs \$2.00@\$3.00 Anvils—American Eagle Anvils. \$0 @8\\delta \text{Hay-Budden}, \text{Wrought}. \$0 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Nos. 7, 8, 11 and 12	Standard	Franklin Moore Co.: Norway Phila., list Oct. 16, '8480', Eagle Phila., list Oct. 16, '8482', Eclipse, list Dec. 28, '9980', Russell, Burdsall & Ward Bolt & Nut Co.: Empire, list Dec. 28, '9980', Norway Phila. list Oct., '8480', Eagle
Anvil, Vise and Drill- Millers Falls Co., \$18.6015&18% Apple Parers—See Parers. Apple, &c. Aprons, Blacksmiths'— Livingston Nail Co	Half Patent	Standard	Upson Nut Co.: Tire Bolts
Augers and Bits— Com. Double Spur	Balances	Green River Tire Benders and Upsetters 20% Bicycle Goods— John S. Leng's Son & Co,'s 1907 list: Chain, Parts, Spokes. 59% Tubes 60%	Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each
C. E. Jennings & Co.: No. 10 ext. lip, R. Jennings list, No. 30, R. Jennings list. 50% Russell Jennings	Straight Balances	Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits. Blocks— Tackle— Common Wooden	Braces— Common Ball, American\$1.50 Barber's
Name	No. 10 Ideal, Nickel Plate. # gro. \$8.50 Beams, Scale— Ecale Beams	Snatch 59%; Tarbox New Style Steel, 59&hD Wire Rope Snatch, 50%. Lane's Patent Automatic Lock and Junior	P., S. & W. Co., Peck's Pat60&10/ Brackets— Wrought Steel70&10@75&10% Bradley Metal Clasp80&10@80&10&5% Griffin's Pressed Steel75&75&10% Griffin's Folding Prackets
No. 2, \$18	No. 12 Wire Coppered \$\psi\$ doz. \$0.80; Tinned	Boards, Wash— See Washboards. Bobs, Plumb— Keuffel & Esser Co	Bright Wire Goods— See Wire and Wire Goods. Brollers— Kilbourne Mfg. Co
#1.75; 11 to 13, #5.75 Hollow Augers— Bonney Pat., per doz. #5.50@7.00 Ames	Holt, per doz., No. 5, Jap'd, \$0.80; No. A. Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65; Lyon, Jap'd, per doz., No. 2, \$1.35, Taplin Mfg, Co.: Improved Dover, per gro., No. 60, \$6.90; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$6.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$1.50; No. 200, Tumbler Tin'd, \$2.50; No. 300, Mammoth, per doz., \$25.00, Mammoth, per Turner & Fermour Mfg, Co.: T. & S. Dover	Common Carriage (cut thread): % × 6 and smaller70.65@% Larger and Longer.60.82%(a—% Phila. Eagle \$3.00 list May \$2,799 Bolt Ends	M'f'gr's list, price per gross. Quart. 10 12 14 Water, Reg 25.35 28.00 32.00 Water, Hvy 45.35 48.00 52.00 Fire, Rd. Btm. 32.00 34.65 38.65 Well 57.35 41.35 45.35 Bull Rings—See Rin ← Bull Butts— Brass— Wrought, High List, Oct. 26, `06. 45@45640% Cast Brass, Tiebout's
Mechanics' Tool. Awis— Brad Awis: Handled. Shideredgro.52.75@3.00 Unhaled, Shideredgro.052@64 Unhandled, Patentgro.06@70 Peg Awis: Unhandled, Patentgro.31@34	Bellows— Blacksmith, Standard List Split Leather 60&10@65% Grain Leather 50@50&10% Hand— Inch 6 7 8 9 10 Doz\$5.00 5.50 6.00 6.50 7.50 Molders— Molders—	Inch 3	Fast Joint, Broad \$0619@50% Fast Joint, Narrow \$10610@50% Loose Joint 70610@75% Loose Pin 70610@75% Mayer's Hinges 7067068 Parliament Butts 7067068 Wrought Steel-Discount Reversible and Broad 7065%
Unhiled, Shideredgro. 65@706 Scratch Aicls: Handled, Comgro. \$3.50@4.00 Handled, Socket.gro.\$11.50@12.00 Awl and Tool Sets—See Sets, Aicl and Tool. Axes—	Inch. 10 12 14 16 Doz. 87.50 9.00 12.00 15.00 2 Bells— Cow— Ordinary Goods7545@75&19&5% High grade70&10@75% Jersey	Brass Knobs: Inch	Light Reversible, Light Nar- row
Single Bit, base weights: Per doz. First Quality\$1,75@5.00 Second Quality\$4.25@4.50	Texas Star	Square 70&10&10 % Ives Patent Door. 55% Ives Wrought Metal. 45%	Hendryx Brans: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900

August 29, 1907	THE IRON AGE			
Hendryx Bronze; Series 700, 80030% Hendryx Enameled35%	Chests, Tool—	Conductor Pip		
Calipers—See Compasses.	American Tool Chest Co.: Boys' Chests, with Tools	L. C. L. to L. Galvani		
Calks, Toe and Heel-	Gentlemen's Chests, with Tools	Galv, Charco Steel. Iron.		
Rlunt, 1 prong, per lb., 41/4 @ 43/4¢ Sharp, 1 prong, per lb., 41/4 @ 51/4¢	with Tools	Eastern: 70% 50&171/2%		
Blunt, 1 prong, per lb., 4\% @ 4\% & Sharp, 1 prong, per lb., 4\% @ 5\% & Burke's, Blunt. 4@3\% & Sharp, 4\% @ 5\% & Lautier, Blunt. 4@4\% & Sharp, 4\% & Sharp, Burke's, Blunt. \$\psi\$ \$1.5\% & \$1.5\%	Tool Cabinets	Western and South		
	Tool Chests7½%	70% 55&5% 80. Western		
See Openers, Can.	Chisels— SocketFraming andFirmer	65&5% 50&5% Terms, 60 days; 2% ca		
Caps, Percussion-	Standard List70&10@75% Buck Bros	See also Eave Troughs		
Eley's E. B	Buck Bros	Coolers, Wate		
F. L	Swan's	L, & G, Mfg, Co.: Gal		
Primers—	Tanged Firmers3045@35%	Galvanized, Lined, 810		
Berdan Primers, \$2 per M 2065% Primer Shells and Bullets 156.10%	Buck Bros. 30% C. E. Jennings & Co. Nos. 191. 181. 25% L. & I. J. White Co	Gal 2 3 Each\$1.95 \$2.15 9 White Enameled Agate Lined		
All other primers per M.\$1.52@1.00	Cold— lb. Cold Chisels, good quality. 13@15#	Coopers' Tool		
Carpet Stretchers— See Stretchers, Carpet.	Cold Chisels, fair quality.11@194 Cold Chisels, ordinary 9@104	See Tools, Coope Coppers' Sold		
Cartridges-		Soldering Coppers, 8 and heavier, 30@3		
Blank Cartridges:	Almond Drill Chucks	than 3 lb. to pair.		
32 C. F., \$5.50	Empire 25%	Braided, Drab		
32 cal. Rim, \$2.751045 %	Pratt's Positive Drive	Braided, Drab Braided, White, Co to 12, 26¢; No. 7, 26		
B. B. Caps, Round Ball\$1.49 Central Fire25% Target and Sporting Riple1545%	Independent Lathe Chucks	271/2¢. Cable Laid Italian, l Italian, lb., A, No. 18		
Primed Nhells and Bullets.19619 L	Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat.,	Common India Cotton Sash Cord, T		
Rim Fire, Sporting507 Rim Fire, Military1545%	Almond Drill Chucks	Common India Cotton Sash Cord, T Patent Russia Cable Laid Russia India Hemp, Br'd'd.		
Casters-	Face Flate Jaws 180 18	India Hemp, Braa. India Hemp, Twiste Patent India, Twiste		
Bed	Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 2135%	Pearl Braided, cotton, 27% ¢; No. 7, 26% ¢; N Eddystone, Braided, N 26¢; 7, 26% ¢; 6, 27% ¢ Harmony Cable Laid 10		
Bcd Gold 10/4 Plate Gold 5/2 Philadelphia 706.10/2 Acme, Ball Bearing 706.10/2 Gem (Roller Bearing) 706.10/6.10/6.5/2 Steel Gem 20/2 Standard Ball Bearing 45/2 Yale (Double Wheel) low list. 40\$-10/2	Scroll Combination, Nos. 83 and 84	Eddystone, Braided, N 26¢; 7, 26½¢; 6, 27½¢		
Steel Gem	Independent Iron, Nos. 18 and 318.36% Independent Steel, No. 6425%	Pullman:		
Yale (Double Wheel) low list. 405-10%	102, 103, 104	Wire Sash Cord Sash Cord Attachmen Samson, Nos. 8 to 12:		
See Leaders, Cattle.	Universal, 11, 12, 16, 17, 13, 14, 15, 40% Universal, No. 42	Braided, # 7b., Drat 55¢; Italian Hem		
Chain, Proof Coil-	Scroll Combination, Nos, 83 and 84	Samon, Nos. 8 to 12: Braided, # fb., Drab 55¢; Italian Herm 50¢; Linen, 65¢; W ton, 50¢; Spot Core Massachusetts, White. Massachusetts, White. Massachusetts, Drab		
American Coil, Straight Link: 3-16	Steel Face Plate Jaws, Nos. 70 and 72 30% Westcott Patent Chucks: Lathe Chucks 50% Little Giant Auxiliary Drill. 50% Little Giant Double Grip Drill. 50% Little Giant Drill, Improved. 50% Oneida Drill. 50% Scroll Combination Lathe. 50%	Phoenix, White, Nos. Silver Lake, per lb.:		
% 34 % to 1 1% to 1¼ inch. \$5.17 4.07 4.02 4.12	Little Giant Double Grip Drill50% Little Giant Double Grip Drill.50% Little Giant Drill. Improved50%	Phoenix, White, Nos. Silver Lake, per lb.: A, Drab, 45¢; A, B, Drab, 40¢; B, Italian Hemp, 40¢; See also Chain and		
In cask lots, deduct 25¢. German Cod	Oneida Drill	See also Chain and Wire, Pict		
Halter-				
Halter Chains	Adjustable, Hammera' 20@20&5% Carriage Makera', P., S. & W. Co 50&10% Pealy, Parallel 33%&10%	Turner & Stanton Co.		
Covert Mig. Co. Halter	Resly Parallel 33%400°, Vers' Hay Rack 55% Lineman's Swedish Neverturn 55% Wood Workers, Hammers' 004:10%, Saw Champs, see Vises, Saw Filers'	Cradles-		
Cow Ties-	Saw Clamps, see Vises, Saw Filers'.	Grain		
See Halters and Ties. Trace, Wagon, &c	Cleaners, Drain— Iwan's Champion, Adjustable50% Iwan's Champion, Stationary40%	White Round Crayon		
Traces, Western Standard: 100 pr.	Sidewalk-	gro., \$6.50@\$7.50 at lower prices made Zelnicker's Lumber.		
61/2-6-2, Straight, with ring . \$29.00 61/2-8-2, Straight, with ring . \$32.00 61/2-10-2, Str'ght, with ring . \$37.00	Star Socket, All Steel. # doz. \$4.05 net Star Shank, All Steel. # doz. \$3.24 net W. & C. Shank, All Steel, # doz., 7½ in., \$3.00; 8 in., \$3.25.	White and Purple I		
612-10-2, Str'ght, with ring \$37.00 NOTE-Add 2c per pair for Hooks.	7½ in., \$3.00; 8 in., \$3.25. Cleavers, Butchers'—	Blue, Red, Green, Terra Cotta, \$6.50; B Giant Lumber, 5¼ in round, all colors.		
NOTE.—Add 20 per pair for Hooks. Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.	Foster Bros	round, all colors, ibles		
Eastern Standard Traces, Wag- on Chain, &c	L. & I. J. White Co	Genuine Soapstone, Me 5 in. x ¼ in. Round. ¼ in. Square, \$1.75; \$2.50; 5 x 1¼ x 3-16		
Miscellaneous-	Sheep-	Crooks, Shephe Fort Madison, per doz.		
Jack Chain, list July 10, '93: 1ron	Chicago Flexible Shaft Company: 1902 Chicago Horse, each. \$10.75 20th Century Horse, each. \$5.00	Crow Bars—See		
60410%	Lightning Belt Horse, each \$15.00 Chicago Belt Horse, each \$20.00 Stewart's Enclosed Gear	Cultivators-		
Gal. Pump Chainlb.4\2@4\4\% Covert Mrg. Co.: Breast, Halter, Heel, Rein, Stal-	Lightning Belt Horse, each \$15.00 Chicago Belt Horse, each \$20.00 Stewart's Enclosed Gear Horse, each	Cutlery, Table-		
lion	ing Machine, each\$12,75 Stewart Enclosed Gear Shear- ing Machine, No. 8, each\$9.75	Cutlery, Table- International Silver Con No. 12 M'd'm Knives, 1 Star. Eagle. Rogers		
American Halter, Dog and Kennel Chains	Clips, Axle—	Star, Eagle, Rogers and Anchor Wm. Rogers & Son		
	Regular Styles, list July 1, '05, 80&\$9&10%	H. H. Mayhew Co Red Devil		
Dog Chain	Cloth and Netting, Wire —See Wire, &c.	Woodward		
Chain and Ribbon, Sash—	Cocks, Brass— Hardware list:	Meat and F		
Oneida Community: Steel Chain	Plain Bibbs, Globe, Kerosene, Racking, Liquor, Rottima. &c	American Nos 401 402 403 4 Each \$5 \$7 \$10 \$ Enterprise:		
Bronze Chain, 60%; Steel Chain. 60&10% Sash Chain Attachments, per set. 3¢	de	Each \$5 \$7 \$10 \$ Enterprise: Nos 5 10 12 \$2 \$2 \$2 \$2 \$2 \$6 \$2 \$5 \$3 \$2.75 \$4.50 \$0 \$0 \$20 \$2 \$1.50 \$0 \$0 \$20 \$2 \$1.50 \$0 \$15.00		
Sash Chain Attachments, per set. 3¢ Aluminov Sash Ribbon, per 100 ft	Coffee Mills— See Mills, Coffee.	P. S. & W. Co.: Dixon's		
Chalk-(From Jobhers.)	Collars, Dog-			
Carpenters' Blue gro., 50@55¢ Carpenters' Red gro., 45@50¢ Carpenters' White gro., 40@45¢	Nickel Chain, Walter B. Stevens & Son's list. 40% Leather, Walter B. Stevens & Son's list 40%	Hales Little Giant		
	Compasses, Dividers, &c.	\$35.00 \$48.00 \$44.0 New Triumph No. 605,		
Checks, Door— Bardsley's	Ordinary Goods70&10@75%	Russwin Food, No. 1, 4		
Russwin	Excelsior Dividers	Enterprise Beef Shavers		

AGE	607
Conductor Pipe,—	Slaw and Kraut-
L. C. L. to Dealers: Galvanized	Henry Disston & Sons:
Galv. Charcoal Copper.	J. M. Mast Mfg. Co.:
astern: 170%. 14, 18620 02. astern: 50&171/2% 30&10%	Henry Disston & Sons: Slaw and Kraut Cutters
065% 60% 30£10%	Tobacco-
extern and Southern: 10% 55&5% 30&71/2% 10. Western	All Iron, Chean doz \$1 25@\$4 50
665% 5065% 3065%	National, doz., No. 1, \$21; No. 2,
erms, 60 days; 2% cash 10 days. Fac-	_
ee also Eave Troughs.	Diggers, Post Hole, &c
& G. Mfg. Co.:	Disston's:
& G. Mfg. Co.: Gal	Rapid, # doz., \$24.00
Alvanized, Lined, side handles, Gal	Vaughan Pattern Post mole Augers.
hite Enameled	Perfection Post Hole Diggers, 30 doz
Coopers' Tools-	doz. 88.75 Split Handle Post Hole Diggers. \$8.75 Split Handle Post Hole Diggers. \$7.75 Hercules Pattern, \$2 doz\$10.00
See Tools, Coopers'.	Hercules Pattern, 3 doz. \$1.00 Kohler's, 4 doz. Universal, \$15.00; Little Giant, \$12.00; Hercules, \$10.00; Invincible, \$9.00; Rival, \$8.50; Ploneer. \$7.50 Never-Break Post Hole Diggers, in
Coppers' Soldering— Idering Coppers, 8 lbs. to pair	\$8.50; Pioneer\$7.50
nd heavier, 30@33¢; lighter han 3 lb. to pair32@35¢	
Cord- Sash-	Dividers—See Compasses.
aided, Drab	See Knives, Drawing.
12, 26¢; No. 7, 26½¢; No. 6,	Dressers, Emery Wheel-
1/4. lie Laid Italian, lb., No. 18 37¢ lian, lb., A, No. 18, 25¢; B, \$2¢	Sterling Emery Wheel Dressers35% Sterling Wheel Dresser Cutters35%
nmon India lb., 11@111/2¢	Drills and Drill Stocks-
ent Russialb20¢	Dischaudital Comments and
ia Hemp, Br'd'dlb21¢ ia Hemp, Twisted, lb.13@14¢	Machines
ent India, Twisted lb 17¢	Goodell Automatic Drills 50&10@60&10 %
%¢; No. 7, 26%¢; Nos. 8 to 12, 26¢ lystone, Braided, Nos. 8 to 12,	Ratchet, Parker's 40%
mony Cable Laid Italian, Nos. 7	Ratchet, Weston's
ton Sash Cord. Tw'ted.18@20¢ ent Russia 1b. 20¢ ele Laid Russia 1b. 21¢ ia Hemp, Br'd'd 1b. 21¢ ia Hemp, Twisted 1b. 21¢ ent India, Twisted 1b. 17¢ rl Braded, cotton. No 6, \$\psi\$, h. ½\$\psi\$, No. 7. 25½\$\psi\$; Nos. 8 to 12, 25¢ lystone, Bradied, Nos. 8 to 12, 25¢ mony Cable Laid Italian. Nos. 7 10 \$\psi\$ b. 22 man: "" B 23 man: "" B 24 man: "" B 2	Ratchet, Void Ratchet, Celebrated Whitney's, P., S. & W. Whitney's, P. S. & W. Slows Slo
sh Cord Attachments, per doz.10¢	Ratchet, Whitney's, P., S. & W., 50&5%
aided, W B., Drab Cotton, 5¢; Italiau Hemp, 40¢@	Whitney's Hand Drill, No. 1, \$10.00; Adjustable, No. 10, \$12.0033\%
con, 50¢; Spot Cord50¢ assachusetts. White 10 lb 40¢	Twist Drills-
man: Ire Sash Cord	Bit Stock
er Lake, per lb.: Drab, 45¢; A, White, 40¢;	60&10@60&10&5%
Italian Hemp, 40¢; Linen57%¢ See also Chain and Ribbon.	Berew D'ver Bits, per doz. 45@50¢
Wile, Ficture	Balsey's Screw Holder and Driver, and dox., 2½-in., \$6; 4-in., \$7.50; 6-in.
dryx Standard Wire Picture Cord.	Buck Bros.' Screw Driver Bits30%
old list. 85&10% per & Stanton Co. Wire Picture rd85&10%	Provin Hol Hidle Sate No. 2 419 507
radies-	Ford a Drace Screw Drivers sow 10%
in40&181/4%	Mayhew's Black Handle
te Round Crayons, Cases, 100	Millers Falls, Nos. 20 and 21 25&10% Millers Falls Nos. 11, 12, 41, 42, 15&10%
oc. \$6.50@\$7.50 at factory, but wer prices made by jobbers icker's Lumber.	Gay 8 Foline Action Hatchet
icker's Lumber. W gro. hite and Purple, Indelible\$7.50	Nos. 7565 to 7568, 50%; No. 7540.
ue, Red, Green, Yellow and Ferra Cotta, \$6.50; Black\$4.00	40&10%
icker's Lumber. \$\frac{3}{2}\$ gro, thite and Purple, Indelible\$\frac{37}{5}\$ ue, Red, Green, Yellow and Ferra Cotta, \$\frac{4}{5}\$.00 in Red, \$\frac{1}{2}\$ (sin \$\text{\$\tex{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$	Eave Trough, Galvanized—
nuine Soapstone, Metal Workers', in, x ¼ in, Round, \$2.50: 5 in x	Territory. L. C. L. Galvanized Galv. Charcoal Copper.
4 in. Square, \$1.75; 5 x ½ x 3-16, 2.50; 5 x 1½ x 3-16\$3.00	Steel. Iron. 14, 16420 oz.
rooks, Shepherds'-	70430% 70% 30410%
Madison, per doz., Heavy, \$5.50;	80% 70&5% 30&10% Western and Southern:
row Bars-See Bars, Crow.	70&30% 70% 30&7½% 80. Western:
ultivators— or Garden	75471/2% 6545% 3045%
utlery, Table— mational Silver Company: , 12 M'd'm Knives, 1817, # dos. 43.50 r. Eagle. Rogers & Hamilton nd Anchor	Terms.—24 for cash. Factory ship ments generally delivered.
r. Eagle, Rogers & Hamilton	See also Conductor Pipe and Elbows. Elbows and Shoes—
n. Rogers & Son	Factory ship nents, all territories: Galv. Steel and Galv. U. 1.
utters— Glass— I. Mayhew Co	Standard Gauge80%
11g. CO	No. 24
Meat and Food-	
rican 401 402 403 404 405 406 407	Elbows, Stove Pipe-
rprise:	Edwards, Standard Blue40&10&10% Edwards, Royal Blue40&10&10% Reeves, Dover, one piece40&10%
cn . \$5 \$7 \$10 \$12 \$22 \$30 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$5	Emery, Turkish-
5. & W. Co.:	Lto KLto
\$14.00 \$17.00 \$19.00 \$30.00	Kegs lb. 5 ¢ 5½¢ 5½¢ 5½¢ 5½¢ 5½¢ 5½¢ 5½¢ 5½¢ 5½¢
les	14 Action 10 .0 196 0 6 4 6
les	10-lb. cans, 10 in case61/4 7 ¢ 6 ¢ 10-lb. cans, less
	than 1010 # 10 # 17 #
win Food, No. 1, \$24.00; No. 2, 00 40&10% 	Less quantity 10 \$ 10 \$ 8 \$ NOTE.—In lots 1 to 3 tons a discount
#15.00 \$18.00 rprise Beef Shavers25@30%	of 10% is given.

608	THE IR
Extractors, Lemon Juice	Glasses, Level-
—See Squeezers, Lemon.	Chapin-Stephens Co65@65&10% Glue, Liquid Fish—
Fastencrs, Blind-	Buttles or Cans, with Brush
Zimmerman's 504:10% Walling 8 404:10% Upson's Patent, 40%	Elwell's
Cord and Weight- Ives and Titan33%	Grease, Axle— Common Gradegro.\$6.00@6.50
Faucets-	Common Gradegro.\$6.00@6.50 Dixon's Everlasting, lu-lb pails, ea. 85¢; in boxes, \$6 doz., 1 b. \$1.20;
Cork Lined	2 7b
Ped Cedar 1045@1041045%	Griddles, Soapstone— Pike Mfg. Co33%@33%&10%
B. & L. B. Co.:	Grinders—
Metal Key	Royal Mfg. Co.: Alundum Grinding Machines, each, Nos. 01, \$1.75; 1A, \$2.50; 10, \$5.00 Alundum Sickle Grinders, each, Nos. 20, \$5.00; 20A, \$6.00; 20A Combined, \$6.50. Alundum Disc Grinders, each, \$2.50 30%
John Sommer's Peerless Tin Key	\$5.00
John Sommer's Duplex Metal Key. 300	Combined, \$6.50
John Sommer's L.X.L. Cork Lined 50%. John Sommer's Reliable Cork Lined	\$2.5030% Grindstones—
John Sommer's Chicago Cork Lined. 60% John Sommer's O. K. Cork Lined. 50% John Sommer's No Brand, Cedar 50% John Sommer's No Brand, Cedar 50% John Sommer's Perfection, Cedar 40% Self Measuring:	Pike Mig. Co.: Improved Family Grindstones, W. Improved Family Grindstones, W. Richards Mig. Co., Eli and Cycle, Ball Bearing, mounted
John Sou mer's No Brand, Cedar50% John Sommer's Perfection, Cedar40%	inch, \$\partial \text{doz.} \ \\$2.0033\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Self Measuring: Enterprise, # doz. \$36.00	Grips, Nipple—
	Perfect Nipple Grips 40&10&2%
See Plates, Felloe.	Halters and Ties-
Files- Domestic-	Covert Mfg. Co.: 30&5@60&10% Web
List Nov. 1, 1899.	Web
Standard Branch 75&10@80% Lower Grance 3& war way owa w.	Jute Rope
Imported-	Oneida Community Am Coil and Halters 40@40&5% Am Cow Ties 45@50% Niagara Coil and Halters. 45@50&5% Niagara Cow Ties 45&5@50&10&5%
Stubs' Tapers, Stubs' list, July 24, '97	Niagara Coul and Halters. 45@50&50% Niagara Cow Ties 45@50&10&5%
Fixtures, Fire Door	Hammers-
Allith Underwriters' Approved50% Hienards Mig. Co.: Thiversal No. 103; Special, No.	Heller's Farriers' 55&10@55&10&5 % Heller's Farriers' 40&5@40&10&5 %
Universal No. 103; Special, No. 104 33.75	Crucible Steel
Grindstone—	Riveting
Net Prices: Inch 15 17 19 21	Peck, Stow & Wilcox Co.: Crucible Steel
1nch 15 17 19 21 Per doz \$3.60 3.85 \$4.15 4.65 P., S. & W. Co \$2.7 Reading Hardware Co \$62.60	Eng. and B. S. Hand. 50 & 10 & 5 (a 60 & 5). Machinists' Hammers 60 (a 60 & 10)
Fodder Squeezers-	Heavy Hammers and
See Compressors.	Under 3 lb., per lb., 50c. 80@8065%
NOTE Manufacturers are	Heavy Hammers and Sledges— Under 3 lb., per lb., 50¢. 80@8045%, 3 to 5 lb., per lb., 40¢. 80@8045%, Over 5 lb., per lb., 80¢
selling from the list of September 1, 1904, but many jobbers are still	Wilkinson's Smiths' lb. 912@10 \$
selling at net prices.	Handles— Agricultural Tool Handles
Iowa Dig-Ezy Potato 60&10% Victor, Hay 60&15&2% Victor, Manure 66%	Aze, Pick, &c
Victor, Header	Hoe, Rake, &c
Champion, Header 60&15&2 2 2 60.8 20 20 20 20 20 20 20 20 20 20 20 20 20	Cross-Cut Saw Handles
Columbia, Manure	Champion
Victor. Hay 60&15&27a c Victor. Manure 665a c Victor. Header 65 c Champion. Hay 65 c Champion. Hay 65 c Champion. Header 65 c Champion. Manure 60&15&27a c Columbia. Hay 60&20 c Columbia. Manure 70 c Columbia. Manure 70 c Columbia. Spading 70&124 c C Potato Digger 60&20 c C C C C C C C C C C C C C C C C C C	Mechanics' Tool Handles- Auger, assortedgro.33.09 (@\$3.50
Acma Manure, 4 tine	Brad Atcl
Kansas Mender	Tanged Firmer, Apple. \$2.4000 \$2.65: Hickory \$2.15@2.40
Plated See Spoons.	\$2.65; Hickory \$2,15@2.40 Socket Firming, Apple, \$1.75@ \$1.95; Hickory \$1.60@\$1.75 Socket Framing, Hickory
Frames— Wood Saw- White, S'g't Bar, per doz.75@804 Red, S'g't Bar, per doz.31.00@1.25	Socket Framing, Hickory, \$1.60@\$1.75
Red, 8'y't Bar, per doz. \$1.00@1.25 Red, Dbl. Brace, per doz.\$1.10@1.50	File, assortedgro. \$1.30@\$1.49 liammer, Hatchet, &c.
Freezers, Ice Cream-	Hand Saw, Varnished, doz.
Ot	80&85¢; Not Varnished 45@75¢ Plane Handles: Jack doz 10¢; Jack Bolted 75¢
Fruit and Jelly Presses-	Jack, doz. 30¢; Jack, Bolted.75¢ Fore, doz. 45¢; Fore, Bolted.90¢ Chapin-Stephens Co.:
See Presses, Fruit and Jelly. Fr. Pans—See Pans, Fry.	Carving Tool
Fuse Per 1000 Feet.	Carving Tool
Hemp	Millers Falls Adj. and Ratchet Auger Handles
Waterproof Dbl Taped. 4.40 E	Nicholson Simplicity File Handle
Gates, Molasses and Oil-	Milers Falis Adj. and Ratcheb Auger Handles 154.20% Nicholson Simplicity File Handles. 154.20% Nicholson Simplicity File Handle. 154.20% W A. Zelnicker Supply Co.: Hammer & doz. 12 in. \$2.00: 14 in. \$2.00: 16 in. \$2.20: 18 in. \$2.50: 20 in. \$2.70: 22 in. \$3.00: 24 in. \$3.00: 26 in. \$3.50: 30 in. \$3.80: 30: 26 in. \$3.50: 30 in. \$3.80: octagon, 30 in. \$3.80: octal, 36 in. \$4.00: octagon, 36 in. \$4.00: octagon, 36 in. \$4.00: octagon, 36 in. \$5.80: 3
Stebbins' Pattern 75@80%	in. \$2.50; 20 in. \$2.70; 22 in., \$3.00; 24 in., \$3.30; 26 in., \$3.50;
Gauges- Marking, Mortine, &c50@50&10%	Sledge, \$2 doz., oval, 30 in., \$3.90; octagon, 30 in., \$3.80;
Chabit-Stephens Co. c:	oval. 36 in., \$4.00; octagon, 36 in., \$4.00.
Wire, Brown & Sharpe's 33%	36 in. \$6.80. Adze, \$7 doz., 36 in., \$5.80; 36
Wire, P., S. & W. Co	in., \$7.80. Pick. 19 doz., R. R., 36 in.,
Gimlets- Single Cut- Numbered assort-	36 in. 30.8t. 36 in., \$5.80; 36 in., \$7.80. 36 in., \$7.80. Pick. \$9 doz., R. R., 36 in., \$8.00; coal, 34 in., \$5.80. Hatchet, \$9 doz., 12 to 14 in., \$2.00.
Nail, Metal, No. 1, \$2.00; 8, \$2.30	Hangers-
ments, per gro. Nail, Metal, No. 1, \$2,00; 2, \$2,30 Npike, Metal, No. 1, \$4,00; 2, \$4,50 Nail, Wood Handled, No. 1, \$2,50; 2, \$2,80	NOTE.—Barn Door Hangers are gen- erally quoted per pair, without track, and Parlor Door Hangers per double set
Spike, Wood Handled, No. 1, 11.00: 2, 11.00	
Glass, American Window See Trade Report.	Allith Mfg Co.: Reliable. Nos. 1 and 2: Allith. No. 3: Allith Adjustable. No. 6: Re- liable Parlor Door. 50%
See trute Report.	name rand IMM

Chicago Spring Butt Co.:	1
Friction	
Big Twin	
Baggage Car Door50% Elevator30%	
Crank & Carrier Mfg. Co.:	
Crook & Carrier Mfg. Co : Loose Axle	
Roller Bearing. 100232, Griffin Mg. Co.: Solid Axle, No. 10, \$12.00.60&10% Roller Bearing, No. 11, \$15.00, 60&13%	
Roller Bearing, No. 11, \$15.00,	
22 \$18.00	
Lane Bros. Co.:	
Parlor, Ball Bearing, \$1.00; Standard, \$3.15; No. 105, \$2.85;	
pion \$2.80; New Cham-	
Hinged	
Special	
Advance 55&10%	
Clipper, No. 75	-
Cyclone, No. 40	iver
New York	n d
Roller Bearing, Nos. 1 and 2.70%	often
Hinged Hangers, King Charm, 60 Meyers' Stayon Hangers60	60E10%
	B/R
Pioneer Wood Track, No. 3, 52, 25 Roller B'rg St'l Track No. 13, 52, 25 Roller B'rg St'l Track No. 13, 52, 50 Boller B'rg, Nos. 39, 44, 43, 70&75%	rtra
Roller B'r'g St'l Track No. 12.\$2.20 Roller B'r'g St'l Track No. 13.\$2.50	3
Boller B'rg, Nos. 39, 41, 43, 70&714	
Adjustable Track No. 19. 50&10% Adjustable Track Tandem Trol-	
Hero, Adj. Track No. 19. 50&10*. Adjustable Track Tandem Trolley Track No. 16 50&10*. Seal, Steel Track No. 2 52. 52. Auto Adj. Track No. 2250&50*. Trolley B. D. No. 17, 31. 25. F. D. No. 120, \$2.25. No. 121, \$2.45; No. 150 \$2.50 Safety Underwriters F. D. No. 101	
Trolley B. D. No. 17, \$1.35; F.	
\$2.45; No. 150\$2.50 Safety Linderwriters F D No.	
Tandem No. 44. 219 and 3 60&10% Place. Adjustable Track No.	
P lace. Adjustable Track No. 132	
Royal, Adjustable Track No. 122	
Ives' Wood Track No. 1\$2.25 Trolley B. D. No. 2050&10%	
Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28\$1.60	
Place. Adjustable Track No. 132 Royal, Adjustable Track No. 122 Sold 10' Ives' Wood Track No. 1	
sizes 2½ and 3	
Folding Door B. B. Swivel No.	
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing. 50&15&10&5%	
Hangers- Garment-	
Aluminoy, \$3.00; 1 pair Round Nick	
seled. \$9.00; 4 pair Round Nickeled \$27.00; 1 pair Flat Gun Metal. \$12.00	,
1 pair Wood Clamp, \$13.50; Skir	t
Coat Hangers, Folding, per gro., \$21.00	1
Nickeled, per gro. \$10.50; Garmen	t.
Pullman Trouser, P gro., 1 pair Fla Aluminoy, \$8.30; 1 pair Round Nickelee led. \$9.00; 4 pair Round Nickelee \$27.00; 1 pair Flat Gun Metal, \$12.00 1 pair Flat Black Enameled, \$7.50 1 pair Wood Clamp, \$13.50; Skir Hangers, Foldinc, per gro., \$21.00 Coat Hangers, Foldinc, per gro. \$3.00; Garment Hanger Roda, Roun Nickeled, per gro., \$10.50; Garme Banger Loops, Round Nickeled per gro., \$10.50; Skir Victor Folding, P gro., \$7	50
Gate-	J. 0U
Myers' Patent Gate Hangers. W doz	1.50
Joist and Timber-	
Lane Bros. Co	0%
Hasps—	
Griffin's Security Hasp	0.9/
Hatchets-	0%
Decular liet fort and tolenic	
Second quality 504100	
Regular list, Arst qual. 10&7460. Second quality 50&1000	
Heaters, Carriage-	=
Heaters, Carriage-	=
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D, \$3.00 No. 3B, \$3.25 No. 1, \$3.50	=
Heaters, Carriage Clark No. 5 \$1.75: No. 5R. \$2.00: No. 3 \$2.25: No. 3D \$2.75: No. 7D, \$3.00: No. 3E, \$3.25: No. 1, \$3.50: 2 Clark Coal. @ doz. \$0.75: 2 Hinges—	5%
Heaters, Carriage— Clark: No. 5 \$1.75: No. 5R. \$2.00: No. 3 \$2.25: No. 3D \$2.75: No. 7D, \$3.00: No. 3E, \$3.25: No. 1, \$3.50:	5%
Heaters, Carriage— Clark: No. 5 \$1.75: No. 5R. \$2.00: No. 3 \$2.25: No. 3D \$2.75: No. 7D, \$3.00: No. 3E, \$3.25: No. 1, \$3.50:	5%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D \$3.00 No. 3E \$2.35 No. 1D \$2.75 No. 7D \$3.00 No. 3E \$3.25 No. 1 \$3.50 2 Clark Coal, P doz., \$0.75 2 Hinges Blind and Shutter Hinges Surface Gravitu Lockina Blind (Victor; National; 1868 O. I Niagara; Clark's O. I Clark's Tip: Ruffalo.	55%
Heaters, Carriage Clark: No. 5 \$1.75: No. 5R \$2.00: No. 3 \$2.25: No. 2D \$2.75: No. 7D, \$3.00 No. 3E, \$3.25: No. 1, \$3.50	55%
Heaters, Carriage Clark: No. 5 \$1.75: No. 5R \$2.00: No. 3 \$2.25: No. 2D \$2.75: No. 7D, \$3.00 No. 3E, \$3.25: No. 1, \$3.50	55%
Heaters, Carriage Clark: No. 5 \$1.75: No. 5R \$2.00: No. 3 \$2.25: No. 2D \$2.75: No. 7D, \$3.00 No. 3E, \$3.25: No. 1, \$3.50	55%
Heaters, Carriage— Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D, \$3.00 No. 3E, \$3.25 No. 1, \$3.50 2 Clark Coal. # doz. \$0.75 2 Hinges— Blind and Shutter Hinges Surface Gravitu Lockina Blind (Victor: National: 1868 O. I. No. 1. 1868 O. I. Clark's Tip; Buffalo.) No. 1 \$ 5.00c. pair \$0.75 1.35 2.7 Mortise Shutter: (L. & P. O. S. Dirie, &c.) No. 1 1/4 2 2/2 Doz. pair \$0.70 65 60 3 Mortise Reversible Shutter (B.)	50%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D \$3.00 No. 3E \$2.25 No. 1D \$2.75 No. 1D \$3.00 No. 3E \$3.25 No. 1, \$3.50 2 Clark Coal, P doz., \$0.75 2 Hinges Blind and Shutter Hinges Surface Gravity Locking Blind (Victor: National: 1888 O. I Niagara: Clark's O. I Clark's Tip; Buffalo.) No 1 \$ \$5 Doz. pair \$0.70 \$5.50 \$5 Mortine Reversible Shutter (Butter)	55%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D \$3.00 No. 3E \$2.25 No. 1D \$2.75 No. 1D \$3.00 No. 3E \$3.25 No. 1, \$3.50 2 Clark Coal, P doz., \$0.75 2 Hinges Blind and Shutter Hinges Surface Gravity Locking Blind (Victor: National: 1888 O. I Niagara: Clark's O. I Clark's Tip; Buffalo.) No 1 \$ \$5 Doz. pair \$0.70 \$5.50 \$5 Mortine Reversible Shutter (Butter)	55%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D \$3.00 No. 3E \$3.25 No. 1 \$3.50 . 2 Clark Coal, \$2.25 No. 1, \$3.50 . 2 Clark Coal, \$2.25 No. 1, \$3.50 . 2 Clark Coal, \$2.25 No. 1, \$3.50 No. 2 Clark's Coal, \$2.25 No. 2 No. 3 No	55%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D, \$3.00 No. 3E, \$3.25 No. 1, \$3.50 2 Clark Coal, P doz., \$0.75 2 Hinges— Blind and Shutter Hinges Surface Gravity Lockina Blind (Victor: National: 1868 O. F. Niagara: Clark's O. F. Clark's Tip; Buffalo.) No 1 \$3.5 Doz. pair \$0.75 1.55 \$7.7 Mortiae Shutter: (L. 4 P., O. 8., Dixie, &c.) No 1 \$1\frac{1}{2}\$ \$2\frac{1}{2}\$ Doz. pair \$0.70 & \$5.60\$ \$8 Mortine Reversible Shutter (Briglia), &c.): No 1 \$1\frac{1}{2}\$ \$2\frac{1}{2}\$ Doz. pair \$0.70 & \$5.60\$ \$8 Mortine Reversible Shutter (Briglia), &c.): No 1 \$1\frac{1}{2}\$ \$2\frac{1}{2}\$ \$2\frac{1}{2}\$ \$0.70 & \$5.60\$ \$8 Mortine Reversible Shutter (Briglia), &c.): No 1 \$1\frac{1}{2}\$ \$2\frac{1}{2}\$ \$2\f	55%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D, \$3.00 No. 3E, \$3.25 No. 1, \$3.50 2 Clark Coal. P doz., \$0.75 2 Hinges— Blind and Shutter Hinges Surface Gravity Lockina Blind (Victor: National: 1868 O. F. Niagara: Clark's O. F. Clark's Tip; Buffalo.) No 1 3 5 Doz. pair \$0.75 1.55 \$7 Mortise Shutter: (L. 4 P., O. 8. Dixie, &c.) No 1 14 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	55%
Heaters, Carriage Clark No. 5 \$1.75 No. 5R \$2.00 No. 3 \$2.25 No. 3D \$2.75 No. 7D \$3.00 No. 3E \$2.25 No. 1 \$3.50 2 Clark Coal, \$2.25 No. 1, \$3.50 2 Hinges Blind and Shutter Hinges Surface Gravitu Lockina Blind (Victor: National: 1868 O. I Niagara: Clark's O. I Clark's Tip; Buffalo.) No 1 \$5 Doz. pair 30.75 1.35 2.7 Mortice Shutter: (L. & P., O. S., Dirie, &c.) No 1 \$1\frac{2}{2}\$ 2\frac{1}{2}\$ Doz. pair 30.70 \$5.60 3.5 Mortice Reversible Shutter (Bi falo, &c.): No 1 \$1\frac{4}{2}\$ 2 Doz. pair 30.70 \$5.60 3.5 Mortice Reversible Shutter (Bi falo, &c.): No 1 \$1\frac{4}{2}\$ 2 Doz. pair 30.70 \$5.60 3.5 Mortice Reversible Shutter (Bi falo, &c.): No 1 \$1\frac{4}{2}\$ 2 Doz. pair 30.70 \$5.60 3.5 Mortice Antomatic Riind Fixtures No. 2, for Wood, \$2.00; No. 3, for Sick, \$11.58 10 Charles Parker Co 70.27 Parker Wire Goods Co.: Hale & Benjamin Automatic Pline Hale & Benjamin Automatic Pline	55%

1	Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00. 22% Reading's Gravity. 60% Stanley's Steel Gravity Blind Hinges, No. 1647%, \$0.000, seets, without screws, \$0.95; with screws, \$1.25.
	No. 16474, doz. seta, without screws, \$0.95; with screws, \$1.25. Wrightsville Hardware Co.: O. S., Lull & Porter
-	Shepard a Nomeross, Nos. 50, 40, 55 55 Niagara, Gravity Lucking, Nos. 1 3 & 5, 75&67 Tip Pat'n, No. 1. 75&10
	Buffalo Gravity Locking, Nos. 1, 3 & 5
-	Empire Co. s Mortise Gravity Locking, No. 2. *** *** *** *** *** *** *** *** ***
	Clark's or Shepard's—Doz. sets: No
	Latches only
-	Reversible Self-Closing: With Latchdoz@\$1.75 Without Latchdoz@\$1.35 Western:
-	With Latchdoz. \$1.75 Without Latchdoz. \$1.15 Wrightsville Hardware Co.; Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3795
-	Pivot Hinges-
-	Bommer Bros. Pivot
	Non-Holdback, Cast Trons6.50(386.75 J. Bardsley's Non-Checking Mortise Floor Hinges
The second secon	Bommer Ball Bearing Floor, 40% Bommer Spring Hinges40% No. 999 Wrot, Steel Hold Back,
	Chicago Spring Butt Co.: Chicago Spring Hinges
	Gem, new list. 9 gr. \$12.00 Clover Lend. 9 gr. \$12.00 Csford, new list. 30% Floor Spring Hinges. 65&10% ELawson Mfg. Co. Matchless. 39% Richards Mfg. Co.
	Superior Double Acting Floor Hinges Stelby Spring Hinge Co.: Buckeye All Steel Holdback Screen Door
	Wrought Iron Hinges-
	Strap and T Hinges, &c., list December 20, 1504: Light Strap Hinges, 50&10 Heavy Strap Hinges, 60&5 Light T Hinges, 50 Heavy T Hinges, 40 Extra Hvy, T Hinges, 50&10
	Extra Hvy. T Hinges. 50&10 % Hinge Hasps
-	Screw Hook 6 to 12 in. lb. 3% to 20 in. lb. 3% to 22 to 36 in. lb. 314 to 20 in. lb. 314 to 36 in. lb.
-	Screw Hook and Eye: 34 to 1 inch 1b
	Hitchers, Stall— Covert Mfg. Co., Stall Hitchers. 3042%
	Hods— Coal— Mf gr's list, price per gross. Inch
	Jap. Funnel 3 35 39 45 Mas-18' Etc Cleveland Wire Spring Co.: Steel Brick. No. 182
	Steel Mortar, No. 158each \$1.35 Hoes— Eye— Scovil and Oval Pattern
	Grub, list Feb. 23, 1897. 410@75&10%

August 29, 1907	THE IN	JN AGE	009
D. & H. Scovil	Lane's Steel	Pullman Patent Ventilating Lock35% Reading Sash Locks	Oil Tanks—See Tanks, Oil.
Handled-	Ladder-	Machines-Boring-	Oilers—
NOTE Manufacturers are selling from the list of September 1, 1904, but	Richards Mfg. Co., Ladder Jacks. 50%	Com. Opri, without Augers.	Tin or Steel
manu loccers are still using the U Au-	Kettles-	Com. Angl'r, without Augers,	Tin or Steel65&10&5@70% Zinc65&10&5@70%
gust 1, 1899, or setting at net prices. Cronk's Weeding, No. 1,\$2,00; No. 2,\$2,50	Brass, Spun, Plain 10(25%	\$2.25(d.2.50 Swan's Improved	Chase or Paragon: Brass and Copper50&10%
Star Double Bit. \$3.20 It. Madison Cotton Hoe. 10&10&10/2 It. Madison Crescent Cultivator Hoe.	Enameled and Cast Iron—See Ware, Hollow.	Jennings', Nos. 1 and 425&7'a7.	Tin or Steel
1. Madison Crescent Cultivator Hoe.	Knives—	Snell's, Upright, \$2.65; Angular, \$2.90	Malleable, Hammers' Improved, Nos.
doz	Butcher, Kitchen, &c	Corking- Reisinger Invincible thand Power	11, 12 and 13, 20%; Old Pattern, Nos, 1, 2, 3, 50%.
Regular Weight	Foster Bros.' Butcher, &c30% Wilkinson Shear & Cutlery Co60%	Fence-	American Tube & Stamping Co.:
Ft. Madison Sprouting Hoe, 4 doz.,	Columbian Cutlery Co Wilcut	Williams' Fence Macunes each, \$5.50	Railroad Oilers, &c60@60&10
t. Madison Dixie Tobacco Hoe	Brand Knives and Hooks	Hoisting- Moore's Anti-Friction Chain Hoist.30%	Openers- Can- Per doz
Aretsinger's Cut Easy	Withington Acine, # doz., \$2.65; Dent, \$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.	Moore's Mand Hoist, with Lock	Sprague, Iron Handle 30@356
A tarren Hoe	Yankee No. 2, \$1.15.	Moore's Cyclon, High Speed Chain	Sprugue, Wood Handle3501/00 Sardine Scissors\$1.75(133.00
B. B., 6 in	Standard List7545@75410%	lce Cutting-	Sardine Scissors \$1.75(433.0) Yankee Can and Bottle Opener, doz., net, \$0.75; Little Gem.
B. B., 6½ in	C. E. Jennings & Co., Nos, 45, 46,	Chandler's121/2%	# duz., net
Hoisting Apparatus-	Jennings & Griffin, Nos. 41, 42,	Boss Washing Machine Co.: Per doz.	Egg- Hartigan Nickel Plate, \$2.00
See Machines, Hoisting.	Swan's	Boss No. 1	Silver Plate, \$4.00.
Holders- Bit-	Watrous	Champion Rotary Banner No. 1.\$57,00 Standard Champion No. 1 \$50,00	Packing-
Angular, \$7 doz. \$24.00	Hay and Straw-	Standard Perfection\$27.00 Cincinnati Square Western\$33.00	Asbestos Packing, Wick and
Bardaley's, Iron, 40%; Brass and	Serrated Eage, per doz. So.50 (Q 5.75	Uneeda American, Bound\$53.60	Rope20@25
Bronze	Iwan's Sickle Edge W doz. \$9.50 Iwan's Serrated doz. \$10.00	Mailets-	Rubber-
Pullman	Miscellaneous— Farriers'	Lighumvile	(Fair quality goods.)
ready, 40%; Nos. 118, 119, Sure Grip	Wostenholm's	Tinners' Hickory and Apple-	Sheet, C. I
Superior35%	Knobs-	wooddoz. 45d5@50%	Sheet, C. B. S
File and Tool-	Base, 21/2 inch, Birch, or Maple, Rubber Tipgro \$1.25@\$1.40	Mangers, Stable— Swett Iron Works	Sheet, Pure Gum 40(0,45)
Handles33%@40%	Carriage, Jap., all sizes gro. 40@45 \$	Mats, Door-	Sheet, Red
Fruit Jar-	Door, Mineral doz. 65@70¢	Elastic Steel (W. G. Co.), new list.50% Keystone Wire Matting Co.;	Miscellaneous-
Friumph Fruit Jar Holder, # gross, \$10.80; # doz\$1.25	Door, Por. Jup'ddoz. 70@75 ¢ Door, Por. Nickeldoz. \$2.05@2.15	Leystone	American Packing lb. 7@10
Trace and Rein-	Bardsley's Wood Door, Shutters, &c.15%	Mettocks	Cotton Packinglb. 16@25 Italian Packinglb. 9@121/2
Corneld Double Trace Holder, 10 doz.	Lacing, Leather-	Mattocks— See Picks and Mattocks.	Jute
pairs Dash Rein Holder, W doz. pairs, \$1,25	See Beiting, Leather-	Milk Cans-See Cans, Milk.	Russia Packinglb. 8@11
Hones-Razor-	Ladders, Store, &c	Mills, Coffee, &c	Pails, Water, Well, &c See Buckets.
Pike Mfg. Co., Belgian and Swaty,	Allith Mfg. Co., Reliable50%	Enterprise Mfg. Co	Pans- Dripping-
50% German	Myers' Noiseless Store Ladders45%	Parker's Columbia and Victoria. 33'a	Standard List
Hooks—Cast Iron—	Richards Mfg. Co.: Improved Noiseless, No. 112	Farker's Box and Side50&10% Swift, Lane Bros. Co30%	Edwards, Royal Blue
	Trolley, No. 10950%	Motors Water	Fry-
Coat and Hat, Reading	Ladles, Melting-	Mowers, Lawn-	Nos 1 2 3 4 5
Harness, Reading List	L. & G. Mfg. Co. (low list)20% P. S. & W	NOTE.—Net prices are generally quoted	Per doz. \$0.75 0.80 0.90 1.10 1.30
Belt	Lanterns—Tubular—	Cheapestall sizes, \$1.85@2.00 Cheapall sizes, \$2.00@2.50	Refrigerator, Galva.— Inch 12 14 16 18
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling	Regular, No. 0doz.\$4.35@4.50	Better Grade. all sizes, \$2.50@4.50	l'er doz \$1.75 2.25 2.80 3,15
Hat, 70&10%; Ceiling	Side Lift, No. 0 doz . \$4.60(a.4.75	High Grade\$4.50 4.75 5.00 5.25	Paper-Building Paper
Parker Wire Goods Co., King., Tukilly,	Hinge Globe, No. 0. doz. \$4.60@4.75 Other Styles40@40&10%	Great American 70%	Asbestos: lb
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%;	Bull's Eye Police-	1 to rout American Mail M'r's new hat 787	Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3 1/2 to 5
Czar Harness, 504:10%.	Latches— Thumb—	Quaker City	Roll Board or Building Felt,
Box, 6 in., per doz., \$1.00; 8 in.,	Roggin's Latches, with screw.	Pennsylvania Golf. 50&10&5%	3-32 and 1/2 in., 45 to 60 lb., per 100 sq. ft
\$1.25; 10 in., \$3.50. Cotton	doz. 35@404	Pennsylvania Borse	Mill Board, Wheet, 40 a 40 in., 1-32 to 12 in
Wrought Staples, Hooks, &c See Wrought Goods.	Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50%	Granite State: Style A. Low Wheel	Per rui
Miscellaneous -	Crons & Carrier Mig. Co., No. 101,	Style B. Low Whitel	Rosin Sized Sheathing: 500 sq. f Light weight, 25 lbs. to roll
Hooks, Bench, see Stops, Bench. Bush, Light, doz., \$6.20; Medium,	Richards Bull Dog. Heavy, No.	Style C, High Wheel, spci. disct., 70&10%	Medium weight, 30 lbs, to roll,
\$6.75; Heavy, \$7.65	125	Style D, High Wheel, spcl. disct.70%	50@55
Grass, best, all sizes, per doz.\$3.00 Grass, common grades, all sizes.	Leaders, Cattle-	Style A, all Steel	Heavy weight, 40 lbs. to roll.
per doz	Small	Drexel and Gold Coin, special list 49%	Black Water Proof Sheathing.
Whiftetree	Cotton, 45%; Hemp, 45%; Jute, 35%;	Horse	500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25.
Brass		36-m, Horse30&10%	Deafening Felt, 9, 6 and 41/2 aq.
Mallcable Iron 70@70&10% Lover Mig. Co. Gate and Scuttle	See Pumps—	Eagle Horse	Red Rope Roofing, 250 sq. ft.
Hooks 48%	Lifters, Transom-	Nails-	per roll
Ft. Madison Cut-Easy Corn Hooks,	R. & E19%	Wire Nails and Brads, Miscel-	Tarred Paper-
Shoulder	Vire Clothes, Nos. 18 19 20	laneous	1 ply (roll 400 eq. ft.), ton \$34.00@\$38.0
	10t feet\$2.50 2.25 2.00	Cut and Wire. See Trace Report. Hungarian, Finishing, Upholster-	2 ply, roll 108 sq. ft68
Horse Nails-	75	ers' dc. See Tacks.	3 ply, roll 108 sq. ft 98 Slater's Felt (roll 500 sq. ft.) 73
See Nalls, Horse.	Solid Braided Chaik, Nea, 0 to 3.40%	Horse-	Sand and Emery-
Horseshoes- See Shoes, Horses.	Silver Lake Braided Chair. No. 0,	Anchor 23 21 20 19 1840&5%	Flint Paper and Cloth.50&10@-
Hose, Rubber-	3, \$7.50	Coleman 13 12 12 11 11net New Haven. 23 21 20 19 1840a5%	Emery Paper and Cloth25 Emery Paper and Cl'h50&10@60
Garden Hone. Winch:	Masous Lines, Shade Cord, &c.: White Cotton, No. 3½, 81.50; No. 4. 82.30; No. 4. 92.50; No. 4. 82.30; No. 4. 92.50; No. 4. 82.50; No. 4. 83.50; No. 4. 84.50; No. 4. 84.50	Livingston . 19 18 17 16 16 10% Western 18 18 17 16 16 10%	Parers Apple-
Competitionft. 5 @ 6 ¢ 3-fly Guaranteedft. 8 @ 9 ¢	\$1.75; No. 4, \$2.25; No. 4/a, \$2.75;	Jobbers' Special Brands	Goodell Co.:
4-ply Guaranteedft. 10 @11 ¢	Linen, No. 3½, \$2.50; No. 4, \$3.50; No. 4½, \$4.50	Picture—	Family Bay State
Cotton Garden, %-in., coupled: Low Gradeft. 8 @ 9 #	White Cotton \$7.50; Drah Cotton	Brass H'd. 45 .55 .60 .70 . gro	New Lightning. 39 doz. \$7.
Fair Quality ft. 10 @11 ¢	Clothes Lines White Cotton: 50 ft	Por. Head 1.10 1.10 1.10 gro	White Mountain 30 doz. 35. Bonanza Improved each \$7.
rons- Sad-	\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75	Nippers-	Dandyeach \$7.
From 4 t o 10 lb . 3 @31/24	\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25.	See Pliers and Nippers.	Dandy
B. B. Sad Ironslb. 34@544 Mrs. Potts', cents per set:	Solid Braided Chaik, Masons' and	Cold Punched: Off list	Rangereach \$25.0
Nos. 50 55 60 65	Awning Lines	Square, Blank or Tapped 4.80c Hexagon, Blank or Tapped 5.10¢	Livingston Nail Co.:
Jap'd Tops83 80 93 91 Tin'd Tops88 85 98 95	Shade Cord, Cotton or Linen20%	Square, Bl'k, C., T. & R 5.10¢	Daisy
	Cabinet Locks	Hexagon. Bl'k, C., T. & R.5.70¢ Hot Pressed:	
New England Pressing. 1b. 34@14	Door Locks, Latches, &c -	Square, Blank 5 00¢	Reading Hardware Co.: Advance
New England Pressing. 1b. 5%@14 Bar and Corner—		Hezagon, Blank5.10e	Baldwin
Bar and Corner— Richards Mfg. Co., Bar, 00&10%;	NOTE.—Net Prices are very often made on these goods.	Square, Tupped Tue	
Bar and Corner— Richards Mfg. Co., Bar, 60%10%; Corner	NOTE.—Net Prices are very often made on these goods. Reading Hardware Co	Square, Tapped 4.70¢ Hexagon, Tapped 5.10¢	Reading 78
Bar and Corner— Richards Mfg. Co., Bar, 60%10%; Corner	NOTE.—Net Prices are very often made on these goods. Reading Hardware Co	Hexagon, Tapped5.10¢	Reading 72
Bar and Corner— Richards Mfg. Co. Bar, 60&10%: Corner 60% Pinking— Pinking— Irons, Soldering	NOTE.—Net Prices are very often made on these goods. Reading Hardware Co	Oakum-	Reading 78 @ doz. \$6.2 Potato— Saratogs
Richards Mfg. Co. Bar, 60&10%: Corner	NOTE.—Net Prices are very often made on these goods. Reading Hardware Co	Hexagon, Tapped	Potato P doz. \$6.2
Bar and Corner— Richards Mfg. Co. Bar, 60&10%: Corner 60% Pinking— Pinking— Irons, Soldering	NOTE.—Net Prices are very often mode on these goods. Iteading Hardware Co	Oakum— Best	Potato— Saratogs

Extendent Lamon Luice	Classes Lavel
Extractors, Lemon Juice —See Squeezers, Lemon.	Glasses, Level— Chapin-Stephens Co65@65&10%
Fastenors, Blind-	Glue, Liquid Fish- Bottles or Cans, with Brush.
Zimmerman's	25&10@50%
Cord and Weight-	Grease, Axle—
Ives and Titan33\%%	Common Grade gro .\$6.00 @6.50
Faucets-	Common Gradegro.\$6.00@6.50 Dixon's Everlasting, 10-10 pails, ea. 866; in boxes, & doz., 1 lb, \$1.20; 2 lb
Dork Lined50&10@60% Metallic Ley, Leather Lined	nemet hard On
Red Cedar 40&5@40&10&5%	Griddles, Soapstone— Pike Mfg. Co331/4@331/4&10%
Petroleum	Grinders-
B, & L. B. Co.:	Royal Mfg. Co.; Alundum Grinding Machines, each, Nos. 01, \$1.75; 1A. \$2.50; 10, \$5.00 Alundum Sickle Grinders, each, Nos. 20, \$5.00; 20A, \$6.00; 20A Combined, \$6.50 Alundum Disc Grinders, each, \$2.50
West Lock	Nos. 01, \$1.75; 1A. \$2.50; 10, \$5.00
John Sommer's Boss Tin Key 50% John Sommer's Victor Mtl. Key 50&10	Alundum Sickle Grinders, each, Nos. 20, \$5,00; 20A, \$6,00; 20A
John Sommer's Duplex Metal Key. 80%	Alundum Disc Grinders, each,
Metal Key	
John Sommer's Chicago Cork Lined. 602. John Sommer's Chicago Cork Lined. 602. John Sonmer's O. K. Cork Lined. 502. John Sonware's Perfection. Cedar. 502. John Somwar's Perfection. Cedar. 402. Self Measuring: Enterprise. # doz. \$36.00. 40&102. Lane's. # doz. \$36.00. 40&102. National Measuring. # doz. \$36.40&102.	Pike Mrg. Co.: Improved Family Grindstones, Mrs. Co., St.
John Son der's No Brand, Cedar59% John Somder's Perfection, Cedar40%	meh, & doz., \$2.00331/4% Richards Mfg. Co., Eli and Cycle,
Self Measuring: Enterprise, doz. \$36.0040&10%	Ball Bearing, mounted40%
National Measuring & doz. \$36.40&10%	Grips, Nipple— Perfect Nipple Grips40&10&2%
Felloe Plates—	Halters and Ties-
See Plates, Felloe.	Cow Ties 60d5@60&10%
Files— Domestic-	Web 30.8.2%
List Nov. 1, 1899. Best Brands70&10@75&10% Standard Branch75&10@80%	Sisal Rope. 20 % Cotton Rope. 45%
Lower Gradeiskivatogovato,	Hemp Rope
Imported-	Covert Mfg. Co.; 30&2° Web 30&2° Jute Rope. 35° Sisal Rope. 20° Cotton Rope. 45° Hemp Rope. 45° Oneida Community. 40° Am Coil and Halters. 40° Ningara Coil and Halters. 45° Ningara Coil and Halters. 45° Ningara Coil and Halters. 45° Ningara Coil and Halters. 45°
Stubs' Tapers, Stubs' list, July 24, '97	Niagara Coil and Halters45@50&5% Niagara Cow Ties45&5@59&10&5%
Fixtures, Fire Door-	riammers-
Allich Underwriters' Approved 50%	Handled Hammers Heller's Machinists 55&40e5&40&5 Heller's Farriers 40&5@40&10&5&5 Peck, Stow & Wilcox Co.: Crucible Steel. 50 Farriers 40&10&5 Riveting 50 Machinists', revised list 66°2&5 Blacksmiths' 50&5 Favette & Plumb:
thenards Mig. Co Universal No. 103; Special No	Peck, Stow & Wilcox Co.: Crucible Steel. 50%
Expansion Bolts, No. 10760&10%	Farriers'
Grindstone-	Machinists', revised list66% &5% Blacksmiths'
Inch 15 17 19 81	Fayette R. Plumb: A. E. Nail
Net Prices: 15 17 19 21 Inch 33.50 3.85 4.15 4.65 Per doz 33.50 3.85 4.15 4.65 Pe, S, & W. Co 25% Reading Hardware Co 60%	Machinists' Hammers 60 60 810
Fodder Squeezers-	Rivet and Tinners'.40&714@40&1212&5% Heavy_Hammers and
See Compressors.	Under 3 lb., per lb., 50¢.80@80&5%
Forks—	Heavy Hammers and Siedges- Under 3 lb., per lb., 50¢.80@8065% 3 to 5 lb., per lb., 40¢.80@8065% Over 5 lb., per lb., 50¢
NOTE Manufacturers are selling from the list of September	80&10@80&10&5% Wilkinson's Smiths'lb. 9\2@10
1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.	Handles-
lowa Dig-Ezy Potato	Agricultural Tool Handles
Iowa Dig Ezy Potato 60&10% Victor, Hay 60&15&25% Victor, Manure 66% Victor, Header 65% Chemping 46%	Are, Pick, dc60&10(160&10&5% Hoe, Rake, dc
Victor, Header	D Handles 10%
Champion, Manure60&15&2\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Cross-Cut Saw Handles-
Victor, Reader Champion, Hay Champion, Header Champion, Header Champion, Manure Columbia, Hay Columbia, Hay Columbia, Manure 102 Columbia, Manure 104 Columbia, Spading 104 Columbia, Spading 105 Columbia, Spading 106 Columbia 106 Columbia 107	Cross-Cut Saw Handles-Atkins' 40% Champion 50% Disston's 59%
Columbia, Spading. 70&12½% Hawkeye Wood Barley. 40% W. & C. Potato Digger. 60&10% Acne Hay. 60&20% Acme Manure, 4 tine. 60&10&65% Dakotz Header. 60&20	Mechanics' Tool Handles- Auger, assorted gro . \$3.00 @ \$3.50
Ache Hay	Auger, assortedgro.\$3.09 @\$3.50 Brad Aulgro.\$1.65@\$1.76
Dakota Header 60&20% Jackson Steel Barley 60&20% Kansas Header 60&20% W. & C. Favorite Wood Barley 40%	Brad Avelgro.\$1.65@\$1.76 Chisel Handles, Ass'd, per gro.: Tanged Firmer, Apple, \$2.40@
W. & C. Favorite Wood Barley40% Plated.—See Spoons.	\$2.65; Hickory \$2.15(0)2.40 Socket Firming, Apple, \$1.75(0)
Frames- Wood Saw-	\$1.95; Hickory \$1.60@\$1.75 Socket Framing, Hickory,
White, S'g't Bar, per doz.75@80¢ Red, S'g't Bar, per doz. \$1.00@1.25 Red, Dbl. Brace, per doz.\$1.40@1.59	\$1.60@\$1.75 File, assortedgro. \$1.30@\$1.49
	liammer, Hatchet, &c. 60&10@60&10&5%
Freezers, Ice Cream-	Hand Saie, Varnished, doz. 80.685¢; Not Varnished 65@75¢
Ot 1 & 3 & 6 Each \$1.25 \$1.00 \$1.90 \$2.20 \$2.80	Plane Handles.
Fruit and Jelly Presses-	Jack, doz. 30¢; Jack, Bolted.75¢ Fore, doz. 45¢; Fore, Bolted.90¢ Chapin Stephens Co.:
See Presses, Fruit and Jelly.	Carving Tool
Fr. Pans—See Pans, Fry. Fuse— Per 1000 Feet.	111301
Hemp	Screw Driver
Hemp	Handles
Waterproof Tpl. Taped. 5.15	W A. Zelnicker Supply Co. :
Gates, Molasses and Oil-	Hammer, & doz., 12 in., \$2.00;
Stebbins' Pattern	\$3.00; 24 in., \$3.30; 26 in., \$3.50;
Gauges—	Sledge, P doz., oval, 30 in.,
Marking, Mortice, &c. 50@50&10%	oval, 36 in., \$4.00; octagon, 36 in., \$4.00.
Chann-Stephens Co.:	Axe. \$9 doz., 28 to 34 in., \$5.60;
Wire Morse's	Adze, \$7 doz., 36 in., \$5,80; 36 in., \$7.80.
Gimlets - Single Cut-	Pick. \$\pi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Numbered assort.	File and Awi
Nail, Metal, No. 1, \$2.00; 2, \$2.30	riangers—
Noike, Metal, No. 1, 21 00 . 9 21 40 1	NOIE Barn Door Hangers are gen-
Nail, Metal, No. 1, \$2.00; 2, \$2.30 Npike, Metal, No. 1, \$4.00; 2, \$3.50 Nail, Wood Handled, No. 1,	and Parlor Door Hanger and doubt
Spike, Metal, No. 1, 84,00; 2, 83,30 Nail, Wood Handled, No. 1, \$2,30; 2, \$2,80 Spike, Wood Handled, No. 1, \$1,50 2, \$1,60	NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c. Allith Mg. Co.: Reliable. Nos. 1 and 2; Allith. No. 3; Allith Adjustable. No. 6; Reliable Parlor Door

JN AGE		_
Chicago Spring Butt Co.:	1	
Friction		1
Oscillating 25% Big Twin. 25% Chisholm & Moore Mfg. Co.: Baggage Car Door		30
Railroad		1
Cronk & Carrier Mfg. Co.: Loose Axle		
Griffin Mfg. Co.: Solid Axle, No. 10, \$12.00.60&10% Roller Bearing, No. 11, \$15.00,		
Roller Bearing, No. 11, \$15,00, 60&10%		
Roller Bearing, Ex. Hy. No. 22, \$18.00		
Lane Bros. Co.: Parlor. Ball Bearing. \$4.00;		
Standard, \$3,15; No. 105, \$2,85; New Model, \$2.80; New Cham-		
Barn Door, Standard60&10% Hinged net \$6.08		
Covered		
Lawrence Bros.:		(
Clipper, No. 75	ė.	
Bull Dog, \$24.00	given	1
McKinney Mfg. Co.:	often	
McKinney Mfg. Co.: Roller Bearing, Nos. 1 and 2.70% Anti-Friction	0 %	1
Meyers' Stayon Hangers60% Richards Mfg. Co.:	MC 10%	1
Richards Mfg. Co.: Hangers, Nos. 47, 48, 147, 247, 60&5%	Extra	,
Pioneer Wood Track, No. 3. \$2. 25 Boiler B'r'g St' Track No. 12. \$2. 20 Roller B'r'g St' Track No. 13. \$2.50 Boller B'r'g, Nos. 39, 41, 43,	Ex	1
Roller B'r'g, Nos. 39, 41, 43, 70&71/2%		
Hero, Adj. Track No. 19. 504:172.5 Adjustable Track Tandem Trolley Track No. 16		
Seal, Steel Track No. 8\$2.25 Auto Adj. Track No. 2250&5%		1
D. No. 120, \$2.25; No. 121, \$2.45; No. 150,\$2.50		
Safety Underwriters F. D. No.		4
P lace, Adjustable Track No.		-
132 50&5 7 Royal, Adjustable Track No. 122 122 122 122 122 122 122 122 122 12		
Trolley B. D. No. 2050&10% Trolley B. D. No. 24. \$1:30: No.		
27, \$1.40; No. 28		
41, 43, 44, Sizes 1 and 2.70&7\\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(,
Hinged Tandem No. 4860&5% Folding Door B. B. Swivel No.		
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing. 50 & 15 & 10 & 5%		-
	1	
Hangers Garment		
Aluminoy, \$9.00; 1 pair Round Niceled. \$9.00; 4 pair Round Nickeled	k-	
\$27.00; I pair Flat Gun Metal, \$12.00 I pair Flat Black Enameled, \$7.5	0;	
Pullman Trouser, # gro., 1 pair Fl. Aluminoy, \$9.00; 1 pair Round Nic- eled. \$9.00; 4 pair Round Nickele- \$27.00; 1 pair Flat Gun Metal. \$12.0 1 pair Flat Black Enameled. \$7. 2 pair Wood Clamp, \$13.50; 8ki Hangers, Folding, per gro., \$21.0 Coat Hangers, Folding, per gro. \$8.00; Garment Hanger Rods, Round Nickeled, per gro. \$10.50; Garmer Hanger Loops, Round Nickele per gro \$1.	0;	
88.00; Garment Hanger Rods, Roun Nickeled, per gro., \$10.50; Garmer Hanger Loors Round Nickele	d	1
per gro		
Gate-	3.60	
Myers' Patent Gate Hangers. W do	z	-
Joist and Timber-	4.50	
Lane Bros. Co	90%	
Hasps-		
Griffin's Security Hasp	0%	
Hatchets-		
Regular list, first qual. 40&71/466 Second quality50&1066	=	
Heaters, Carriage-		-
Clark No. 5 \$1.75; No. 5B, \$2.00; No. 3 \$2.25; No. 3D \$2.75; No. 7D, \$3.00; No. 3D, \$3.50; No. 1, \$3.50	0.	
Clark Coal, \$2 doz., \$0.75	0%	1
Hinges-		
Blind and Shutter Hinges		
Surface Gravity Locking Blind (Victor; National; 1868 O. Niagara; Clark's O.	D .	(
filark's Tin : Rumala)		
No	10	
(L. & P., O. S., Dirie, &c.)		
Doz. pair	5	
falo, &c.):	141	,
Don male some er	50	
North's Automatic Blind Fixture No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50	10%	
Parker Wire Goods Co.:	- 1	-
Hale & Benjamin Automatic Blin Hinges	0%	-

3), -) - 1
Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00
No. 1647%. W doz. sets. without
screws, \$0.95; with screws, \$1.25. Wrightsville Hardware Co.: O. S., Luli & Porter
55
No. 3 75&5% Buffalo Gravity Locking, Nos. 1, 3 & 5 70&10&5% Shepard's Double Locking, 75&5% Champing Gravity Locking, 75&5%
Pioneer
Gato Hinges-
No
New England: With Latchdoz@\$2.00 Without Latchdoz@\$1.60
Reversible Self-Closing: With Latchdoz@\$1.75 Without Latchdoz@\$1.35 Western:
With Latch
Latches, Hinges only or Latches only, Nos. 1, 2 or 3
Bommer Bros. Pivot
Holdback, Cast Iron \$6.75 @ \$7.90 Non-Holdback, Cast Iron \$6.50@\$6.75
J. Bardsley: Bardsley: Bardsley: Non-Checking Mortise Floor Hinges
No. 999 Wrot, Steel Hold Back, of gr. 39.00 Chicago Spring Butt Co.: Chicago Spring Hinges 25% Triple End Spring Hinges 50%
Chicago (Ball Bearing) Floor. 50% Garden City Engine Hous. 25% Keene's Saloon Door
American American Columbia, #9 gr., No. 14, 43.09 No. 18, \$35.00 Columbia, Adj., No. 7, #9 gr., \$12.00 Columbia, Hings
Gem. new lat. 30 Clover Leaf. 100 Clover Leaf. 30 F 5 12.00 Clover Leaf. 30 F 5 12.00 Clover Leaf. 30 F 100 Spring Hinges 55 10 Clover Mg. Co. Matchless 30 F 100 Clover Mg. Co. Mg.
Superior Double Acting Floor Hinges
Screen Door
Hinge Bail Bearing Floor Hinge Search State Holdby Research Spring Hinge Co.: Superior Floor Hinges
Wrought Iron Hinges- Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges. 50610%
Heavy T Hinges
Screw Hook and Strap. { 6 to 12 in lb . 3% 4 to 20 in lb . 3 1/4 to 20 in lb lb lb lb lb lb .
Screw Hook and Eye: 34 to 1 inch
Hitchers, Stall-
Covert Mfg. Co., Stall Hitchers. 30&2% Hods— Coal— Wiffar's Not price per green
M'f'gr's list, price per gross. Inch 18 18 17 14 Galv. Open 25 28 28 28 26 Jap. Open 26 28 31 25 Galv. Funnel. 43 48 52 56 Jap. Funnel. 43 36 39 43
Mas18' Etc Clereland Wire String Co.: Steel Brick. No. 182each \$1.05 Steel Mortar, No. 153each \$1.35
Hoes— Eye- Scovil and Oval Pattern
Grub, list Feb. 23, 1809.

August 29, 1907	THE IRO	ON AGE	609
D. & H. Scoril	Lane's Steel	Pullman Patent Ventilating Lock35% Reading Sash Locks	Oil Tanks-See Tanks, Oil.
Handled-	Ladder-	Machines-Boring-	Oilers—
NOTE. — Manujacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au-	Richards Mfg. Co., Ladder Jacks. 50%	Com. Upr't, without Augers. \$2.00@2.25	Tin or Steel65&10&5@70%
gust 1, 1899, or searing at net prices.	Kettles— Brass, Spun, Plain20@25%	Com. Angl'r, without Augers, \$2.25(a2.50	Zinc
Cronk's Weeding, No. 1,\$2,00; No. 2,\$2,50 Star Double Bit\$3.20 Ft. Madison Cotton Hoe70&10x107.	Enameled and Cast Iron—See Ware,	Swan's Improved	Brass and Copper50&10% Tin or Steel65&10%
	Knives—	Suell's, Upright, \$2.65; Angular, \$2.90	Zinc
# doz. 10&10% Ft. Madison Mattock Hoes: Regular Weight. # doz. 40&5%	Butcher, Kitchen, &c.— Foster Bros.' Butcher, &c30%	Corking- Reisinger Invincible Hand Power	
Ft. Madison Sprouting Hoe, & doz.,	Wilkinson Shear & Cutlery Co60% Corn-	Fence-	American Tube & Stamping Co.: Spring Bottom Cans
Ft. Madison Dixie Tobacco Hoe 75&10&7/2%	Columbian Cutlery Co., Wilcut	Williams' Fence Macaineseach, \$5.50 Hoisting—	Openers- Can- Per doz.
L'esteinger's Cut Easy	Withington Acine, \$4 doz., \$2.65; Dent, \$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.	Moore's Anti-Friction Chain Hoist.30% Moore's Hand Hoist, with Lock	Sprayue, Iron Handle 30@356 Sprayue, Wood Handle 3500, 40¢
Warren Hoe	Serrated, \$2.10; Iankee No. 1, \$1.50; Yankee No. 2, \$1.15.	Moore's Cyclon, High Speed Chain Host	Sardine Scissors \$1.75@\$3.00 Yankee Can and Bottle Opener,
B. B., 6% in	Standard List	Ice Cutting-	and Bottle Opener, doz., net, \$0.75; Little Gem, doz., net
Hoisting Apparatus—	C. E. Jennings & Co., Nos. 45, 46, 25&7½, Jennings & Griffin, Nos. 41, 42,	Washing	Egg-
See Machines, Hoisting.	Swan's 66% 47.2 66% 47.0 66% 4	Boss Washing Machine Co.: Per doz. Boss No. 1	Hartigan Nickel Plate, 30 doz., \$2.00; Silver Plate, \$4.00.
Holders— Bit- Angular, @ doz. \$24.00	Watrous	Boss Rotary	Packing-
Bardsley's, Iron, 40%; Brass and	Hay and Straw— Serrated Edge, per doz.\$5.50@5.75	Standard Perfection\$27.00 Cincinnati Square Western\$33,00 Uneeda American, Round\$35.60	Asbestos Packing, Wick and
Bronze	Iwan's Sickie Edge	Mallets—	Rope
Pullman	Miscellaneous— Farriers'	Hickory	(Fair quality goods.)
	Wostenholm's	Tinners' Hickory and Apple- wooddoz. 45&5@50%	Sheet, C. 1
Superior	Base, 21/2-inch, Birch, or Maple,	Mangers, Stable—	Sheet, C. B. S 12(a/3)
Nicholson File Holders and File Handles	Rubber Tipgro.\$1.25@\$1.40 Carriage, Jap., all sizes	Swett Iron Works50% Mats, Door-	Sheet, Pure Gum
Fruit Jar-	Door, Mineraldoz. 65@70 €	Elastic Steel (W. G. Co.), new list.50% Keystone Wire Matting Co.:	Miscellaneous-
Triumph Fruit Jar Holder, p gross, \$10.80; d doz\$1.25	Door, Por. Jap'ddoz. 70@75 ¢ Door, Por. Nickeldoz. \$2.05@2.15	keystone 50%	American Packing lb. 7@10
Trace and Rein-	Bardsley's Wood Door, Shutters, &c.15%	Mattocks-	Italian Packinglb. 16(425)
Fernald Double Trace Holder, & doz. pairs	Lacing, Leather—	See Picks and Mattocks.	Russia Packinglb. 8(41)
Hones—Razor—	See Belling, Leather- Ladders, Store, &c. ~	Milk Cans—See Cans, Milk. Mills, Coffee, &c.—	Pails, Water, Well, &c.— See Buckets.
Pike Mfg. Co., Belgian and Swaty, 50%; German331/2%	Allith Mfg. Co., Reliable50% Lane's Store25% Myers' Noiseless Store Ladders45%	Enterprise Mig. Co20@25% National list Jan. 1. 190230%	Pans- Dripping-
Hooks—Cast Iron—	Myers' Noiseless Store Ladders45% Richards Mfg. Co.:	Parker's Columbia and Victoria. 3318 Parker's Box and Side50&10%	Standard List
Bird Cage, Reading List	Richards Mig. Co.: Improved Noiseless, No. 112	Swift, Lane Bros. Co30% Motors Water—	Fry-
Coat and Hat. Wrightsville60&5%	Ladies, Melting-	Divine's Red Devil30%	Common Lipped: Nos 1 2 3 4 5
Wire-	L. & G. Mfg. Co. (low list)20% P. S. & W	NOTE.—Net prices are generally quoted	Per doz. \$0.75 0.80 0.90 1.10 1.30 Refrigerator, Galva.—
Belt Wire C. & H. Hooks 70&10@75%	Lanterns— Tubular—	Cheapestall sizes, \$1.85(42.00 theapall sizes, \$2.00(42.50	Inch 12 14 16 18
Bradley Metal Clasp Wire, Coat and	Regular, No. 0doz.\$4.35@4.50 Side Lift, No. 0doz.\$4.60@4.75	Better Grade. all sizes, \$2.50@4.50	Person Building Paper
Columbian Hdw. Co., Gem70&5% Parker Wire Goods Co., King70&10%	Hinge Globe, No. 0. doz. \$4.60@4.75 Other Styles	High Grade\$4.50 4.75 5.00 5.25 Continental	Paper—Building Paper Asbestos: lb
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%;	Bull's Eye Police-	Great American	Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.31/2to5
Czar Hamess, 50&10%. Wrought Iron—	S-inch	Quaker City	Roll Board or Building Felt, 3-32 and 1/4 in., 45 to 60 lb.,
Box. 6 in., per doz., \$1.00; 8 in.,	Roggin's Latches, with screw doz. 35@40\$	Pennsylvania Golf	per 100 eq. 1t
\$1.25; 10 in., \$8.50. Cottondoz. \$1.05@\$1.25 Wrought Staples. Hooks. &c.—	Daam	Pennsylvania Pony40&5% Granite State:	1-32 to 1/2 in
Wrought Staples, Hooks, &c.— See Wrought Goods. Miscellaneous—	Allith Mfg, Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50% Crons & Currier Mig. Co., No. 101, Richards' Rull Dog. # doz. \$2.00	Style A. Low Wheel	Rosin Sized Sheathing: 500 sq. ft Light weight, 25 lbs. to roll
Hooks, Bench, see Stops, Bench. Bush, Light, doz., \$6.20; Medium,		Style U, High Wheel, spel. disct., 70&10%	Medium weight, 30 lbs. to roll,
\$6.75; Heavy, \$7.65 Grass, best, all sizes, per doz.\$3.00	Richards' Trump, No. 127\$1.50	Style D, High Wheel, spcl. disct.70% Phinadelphia:	Heavy weight, 40 lbs. to roll.
Grass, common grades, all sizes, per doz\$1.75	Leaders, Cattle— Smalldoz. 50¢; large, 80¢	Pinade pina: Styles M., S., O., K., T. 70&10&5% Styles M., S., O., K., T. 00&10&5% Style E. High Wheel	Black Water Proof Sheathing.
Whiftetree	Covert Mfg. Co.; Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.	Horse40&5%	500 aq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25.
Brass	Leathers, Pump—	Pony	ft. to lb. ton
Cover. Mg. Co. Gate and Scuttle	See Pumps—	1. X, L. Horse	Red Rope Roofing, 250 sq. ft. per roll
Ft. Madison Cut-Easy Corn Hooks, Turner & Starton Ge. Cap and	R. & E10%	Nails-	Tarred Paper-
Shoulder	Lines—	Wire Auils and Brads, Miscellaneous871/2@871/2@10%	1 ply (roll 400 sq. ft.), ton
Bench L. Di y-See Beach Stops. Corn Hooks-See Knives, Corn.	Nire Clothes, Nos. 18 19 20 101 feet\$2.50 2.25 2.00	Cut and Wire. See Trace Report. Hungarian, Finishing, Upholster-	2 ply, roll 108 sq. ft68
See Nails. Horse.	75 set \$1.75 1.35 1.10 Samson Cordage Works: Solid Braided Chalk, Nos. 0 t= 3.40% Solid Braided Masons	ers' &c. See Tacks. Horse—	3 ply, roll 108 sq. ft
Horseshoes-	Solid Braided Masons'30% Silver Lake Braided Chalk No 0.	Anchor 23 21 20 19 1840&5%	Sand and Emery— Flint Paper and Cloth.50&10@—2
See Shoes, Horses. Hose, Rubber-	Silver Lake Branded Chalk. No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50	New Haven 23 21 20 19 184025%	Garnet Paper and Cloth 25% Emery Puper and Clh
Garden Hose, %-inch:	3, \$1.50, 1, \$0.50; NO. 2, \$1.50; NO. 20; Masous' Lines, Shade Cord, &c.: White Cotton, No. 3½, \$1.50; No. 4, \$2.20; No. 4½, \$2.25; No. 4, \$2.50; No. 4, \$3.50; No. 4, \$4.34; \$4.50; No. 4, \$4.35; No.	Livingston 19 18 17 16 16 10% Western	Parers Apple-
Competitionft. 5 @ 6 ¢ 3-ply Guaranteed, ft. 8 @ 9 ¢	\$1.75; No. 4, \$2.25; No. 4½, \$2.75; Linen, No. 3½, \$2.50; No. 4, \$3.50;	per 10.9@10e	Goodell Co.: Family Bay State doz. \$15.0
4-ply Guaranteedft. 10 @11 ¢ Cotton Garden, %-in., coupled:	No. 4½, \$4.50	Picture—	Improved Bay State
Low Gradeft. 8 @ 9 ¢ Fair Qualityft. 10 @11 ¢	\$8.50	Brass H'd.45 .55 .60 .70 . gra Por. Head 1.10 1.10 1.10 . gra	
rons- Sad-	\$2.75; 60 ft., \$3.20; 70 ft., \$3.75; 75 ft., \$4.00; 66 ft., \$4.25; 90 ft., \$4.75;	Nippers— See Pliers and Nippers.	Bonanza Improvedeach \$7.5 Dandyeach \$10.0 Eureka Improvedeach \$20.0
From 4 t o 10	White Cotton, \$4.30; Drab Cotton, \$8.59 20.00 20	Nuts-	New Centuryeach \$20.0
Mrs. Potts', cents per set: Nos. 50 55 60 65	Awning Lines. White Cotton 30	Cold Punched: Off list. Square, Blank or Tapped. 4.80c	Rangereach \$25.0 Livingston Nail Co.:
Jan'd Tons	Awning Lines	Hexagon. Blank or Tapped. 5.10¢ Square, Bl'k, C., T. & R 5.10¢ Hexagon. Bl'k, C., T. & R. 5.70¢	Daisy
Tin'd Tops88 85 98 95 New England Pressing.lb. 5%@44	Cabinet Locks	Hot Pressed:	Rocking Table
Bar and Corner-	Door Locks, Latches, &c -	Square, Blank	Advance 29 doz \$4.0
Richards Mfg. Co., Bar, 60&10%; Corner	NOTE.—Net Prices are very often made on these goods. Reading Hardware Co40%	Square, Tapped 4.70¢ Hexagon, Tapped 5.10¢	Reading 72
Pinking Ironsdos.600	Padlocks-		Reading 78 # doz, \$6.2
	R. & E. Mfg. Co. Wrong Steel and	Oakum-	Sarators W doz #7 6
Irons, Soldering	Brass	Rest Ih 6144	White Mountair 30 4-
See Consers.	Sash, &c	Rest lb., 6 ¹ / ₂ ¢ U. S. Navy lb., 6¢ Navy	White Mountair
	Sash. &c	Rest	White Mountair

610	THE IR	ON AGE	August 29, 1907
Pinking Irons—	George William Hoffman: U. S. Metal Polish Paste, 3 oz.	Flint & Walling's, Fast Mail Hand,	Registers-List July 1, 1903.
See Irons, Pinking.	boxes, \$\psi\$ doz. \$50\psi\$, \$\psi\$ gro. \$4.50; \$\psi\$ boxes, \$\psi\$ doz. \$1.25; \$1 boxes. \$\psi\$ doz. \$2.25. U. S. Liquid, \$0.2. cans, \$\psi\$ doz., \$2.25.	(low list)	Japanned, Electroplated and Bronzed
Pins, Escutcheon-	boxes. # doz. \$2.25. U. S. Liquid, 8 oz. cans. # doz.,	list)	White Porcelain Enamel 60%
Brass	Barkcepers' Friend Metal Polish, & doz., \$1.75.	National Specialty Mfg. Co. Measur- ing. Nos. 2, \$6.00; 3, \$5.50 30, Myers' Pumps (low list) 45, Myers' Power Pumps 45, Myers' Power Pumps 45,	Solid Brass or Bronze Metal, 40&10%
Pipe, Cast Iron Soil-	Stove-	Myers' Power Pumps	Revolvers—
Standard, 2-6 in	Black Eagle Benzine Paste, 5 fb cans,	Pump Leathers-	Single Action
Extra Heavy, 2-6 in	Black Eagle, Liquid, 1/2 pt. cans	Lower Valve Leathers-Per gro.:	Double Action, 44 caliber \$2.00 Automatic
Pipe, Merchant-	Black Jack Paste, % to caus, # gr. \$9.00 Black Kid Paste, 5 th caneach, \$0.65 Ladd's Black Beauty Liquid, per	Inch2 2½ 3 3½ 4 \$3.10 3.70 4.35 4.95 5.60	Hammcrless\$4.50
Consumers, Carloads.	Ladd's Black Beauty Liquid, per 100 tins	Crimped Plunger Leathers—Per	Riddles, Hardware Grade 16 inper doz.\$2.50@\$2.75
Steel. Iron. Blk. Galv. Blk. Galv.	Dixon's Plumbago	Inch2½ 3 3½ 4 \$4.15 5.25 7.80 9.65	17 in per doz . \$2.75(a.\$3.00
14 de 14 in 64 48 57 41 14 in 66 52 59 41	Fireside	Punches-	Rings and Ringers—
1/6 in	Japanese # gr. \$3.50 Jet Black # gr. \$3.50 Feerless Iron Enamel, 10 oz. cans. # doz. \$1.50	Saddlers' or Drive, good	Bull Rings-
% to 6 in 72 42 66 56 7 to 12 in 69 84 61 46	Poppers, Corn-	Spring, single tube, good qual-	Steel \$0.70 0.75 0.80 doz.
Pipe, Vitrified Sewer	1 qt. Square doz . \$0.88; gro . \$8.75	Revolving (4 tubes) doz. \$3.60	Hog Rings and Ringers-
Carload lots. Standard Pipe and Fittings, 8	1 qt. Rounddoz.\$1.00; gro.\$10.00 1½ qt. Square.doz.\$1.10; gro.\$11.00	Bemis & Call Co.'s Cast St'l Drive.50% Morrill's Nos, IAA, IA, IB, IC,	Hill's Rings, gro. boxes\$4.25
to 24 in., f.o.b. factory:	2 qt. Square doz . \$1.35; gro.\$13.50	1D, \$15.00	Hill's Ringers, Gray Iron, doz. 60¢
First-class	Post Hole and Tree Au- gers and Diggers—	Niagara Solid Punches	Blair's Ringsper g
NOTE.—Market irregular.	See also Diggers, Post Hole, &c.	Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi55%	Blair's Ringersper doz.75¢ Brown's Ringsper gro.\$5.25
Pipe, Stove— Per 100 joints.	Posts, Steel-	Wm, Schollhorn Cc., Bernard, 35%; Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi	Brown's Ringersper doz.75¢
Edwards' Nested: C. L. L. C. L. 5 in., Standard Blue\$6,25 \$7.25	Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 61/5 ft., 48¢. Steel Hitching Postseach \$1.30	US6. 91.11	Rivets and Burrs—
6 in., Standard Blue 6.75 7.75 8.75	Potato Parers—	Rail-Barn Door, &c	Carriage, Coopers', Tinners, &c .:
5 in., Royal Blue	See Parers, Potato.		Black
Wheeling Corrugating Co.'s Nested:	Pots, Glue-	Sliding Door, Painted Iron	Bifurcated and Tubular-
6 in., Uniform Color. 6.65 7.65 7 in., Uniform Color. 7.65 8.65	Enameled	Sliding Door, Wrought Brass, 1\% in., lb., 36\cdot \cdot \cd	Assorted in Boxes. Bifurcated, per doz. boxes, paste-
Planes and Plane Irons-	Powder-	Allith Mfg. Co.: Reliable Hanger Track50%	board boxes, 50 count, 32@36¢; Tin boxes, 100 count, 60@67¢.
Wood Planes-	In Canisters:	Double Braced Steel Rail. 1 ft. 34 ¢	Tubular, per doz. boxes, count, 60@67¢; 100 count, \$1.12@\$1.26.
Rench first qual 30@30&10%	Duck, 1 lbeach 45¢ Fine Sporting, 1 lbeach 75¢ Rifle, ½-lbeach 15¢ Rifle, 1-lbeach 25¢	O. N. T. Rail\$3,12 Griffin's:	Rollers-
Bench, second qual 40@ 40& 10% Molding	Rifle, 1-lbeach 25¢	XXX, \$\text{9}\$ 100 ft., 1 x 3-16 in., \$3.25; 1\text{1\text{4}}\$ x 3-16 in., \$3.75. Hinged Hanger, \$\text{9}\$ 100 ft., 1 x 3-16 in., \$3.50; 1\text{4}\$ x 3-16 in., \$4.00.	Cronk's Stay, No. 50\$1.00
Chapin-Stephens Co.: Bench, First Quality	12 ¹ / ₂ -lb, kegs	Lana's	No. 56, \$0.75; No. 60
		Hinged Track, \$\partial 100 ft. \docs \$3.45 \\ \text{O. N. T., }\partial 100 ft., 1 in., \$3.00;\text{is.} \\ \text{in., }\\$3.45; 1\frac{1}{2} in., \$\\$4.00.	Richards' Stay; Handy Adj. and Reversible No. 53.75¢
Union	Half Keg (12½ 1b bulk)\$3.50 Quarter Keg (6½ 1b bulk)\$1.90	Standard, 176 tu 100 It. \$1.00	O. K. Adj. and Reversible No. 58,50 & Lag Screw, Nos. 55 and 57
Iron Planes	King a Semi-Smokeless: Keg (25 b bulk)	Lawrence Bros.: 1 x 3-16 in., \$9 100 ft., \$7.50; 1\frac{1}{4} x 3-16 in., \$8,75	Favorite, No. 54
Chaplin's Iron Planes	Keg (25 lb bulk)\$12.00 \$15.00 Half keg (12½ lb bulk) 6.25 7.75	McKinnev's:	Rope—
Plane Irons-	Keg (25 b bulk)	Hinged Hanger Track, # ft. 11¢, 60&5%	Manila, 7-16 in. diam. and larger: Purelb., 13@131/26
Wood Bench Plane Irons, list Dec. 12, '0625%	Presses-	1 x 3-16 Track	Sisal, 7-16 in. diam. and larger: Pure
Chapin Stephone Co	Fruit and Jelly-	Richards' Mfg. Co.; Common, 1 x 3-6 in., \$3.00; 1½ x 3-16, \$3.25; 1½ x 3-16, \$3.50. Special Hinged Hanger Rail60&10%	Sixal, 7-16 in, diam, and jarger
Union	Enterprise Mfg. Co20@25%	Special Hinged Hanger Itail60&10% Lag Screw Rail, No. 6550%	No. 2 qualitylb., 7% @86 Sisal, Hay, Hide and Bace
Planters, Corn, Hand-	Seal Presses— Morrill's No. 1, \$2 doz., \$20,0050%	Lag Screw Rail, No. 65	Ropes, Medium and Coarse: Mired
Kohler's Eclipse 🎖 doz. \$8.00	Pruning Hooks and Shears	No. 50	Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Plates-	See Shears.		Mixed
Felloe	Pullers, Nail-	Rakes-	Pure
Pliers and Nippers -	Cyclops	NOTE.—Many goods are sold at net prices.	Best, 1/4-in. and larger 18@206 Mcdium, 1/4-in. and larger. 16@176
Button Pliers75@75&10% Gas Burner, per doz., 5 in., \$1.25	Morrill's No. 1, Nail Puller, doz. \$20.00	Fort Madison Red Head Lawn\$3.25 Fort Madison Blue Head Lawn\$2.70	Common, 4-in. and larger100 In coils, 4-e advance.
@ \$1.30; 6 in., \$1.45 @ \$1.50. Gas Pipe. 7 8 10 12-in. \$2.00 \$2.25 \$2.75 \$3.50	The Scranton Co. Case Lote:	Cronk's: Steel Garden: Champion, 75%; Ideal, 80%; Victor80&25% Queen City Lawn, & doz., 20 to	Jute Rope: Thread, Vo. 1, ¼-in. & up, lb., 9 Thread, Vo. 2, ¼-in. & up, lb., 81%
Acme Nippers	No. 2B (large)	Ideal, 80%; Victor	Wire Rope-
Improved Button	Diamond B70%	\$2.85; 24, \$3.00	Galvanized
No. 80 Linemen's50%	Staple Pullers, Utica and Davi-	\$15.00; 14, \$16.00; 16, \$18.0080%	Fillin
	80h60%	Kohler's: Lawn Queen, 20-tooth A doz. \$3.15	Covert Mfg. Co.:
Stud's Pattern. 183/8/ Combination and others. 183/8/ Heller's Farriers' Nippers, Pincers and Tools. 190.5/@40&10&5/ P., S. & W. Tinners' Cutting Nip-	Pulleys, Single Wheel—	Lawn Queen, 24-tooth	Jute, 35%; Sisal
Wm. Schollhorn Co.:	Awning or Tackle,	Steel Garden 14-fonth #F doz %2 40	Rules Boxwood
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.	Hay Fork, Sucret or Solid Eye.	Malleable Garden, 14-tooth, # doz. \$2.00@2,25	Boxwood
Swedish Side, End and Diagonal Cut- ting Pliers	Inch 2 21/4 21/4	Pasps, Horse— Disston's	Flexifold
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds	Hot House, doz\$0.65 .85 1.20 Inch 11/4 11/4 13/4 8 Screw, doz\$0.16 .19 .23 .30	Disston's	1 VOLY
Plumbs and Levels—	1 176CH 194 Z Z Z Z	McCaffrey's American Standard. 60&10&5% New Nicholson	Miscellaneous 590250&107 Stephens' Combination 552 Stationers' 500250&107 Kouffel & Faser Co.: Falding Wood 784.107
Chapin-Stephens Co.: Plumbs and Levels30@30&10%	Side, doz\$0.25 .40 .55 .60 Inch 11/2 13/4 8 81/2	See also Files.	Folding Wood
Chapin's Imp. Brass Cor. 40@40&10% Pocket Levels 30@30&10°	Sash Pulleys- Common Frame; Square or	Razors	Folding Steel 334&10? Infin's Steel 50&10
Extension Sights	Kouna Ena, per aoz, 1% and	Liana Bo-ras-ic	I neon Nut Co.: Roxwood Romenaine Ivory
Disston's Plumbs and Levels60&10% Disston's Pocket Levels60&10% Stanley's Duplex	2 in	No. 44, \$20,00; No. 82, Platina.	_
Woods' Extension334%	per doz., 1% and 2 in 20@21c Acme. No. 35. 1% in., 19¢; 2 in., 20%c Fox-All-Steel. Nos. 3 and 7, 2 in., 20%c	Red Devil65%	Sash Balances—
Points, Glaziers'-	Trainit Manuals Att Street Solsetess., 30%	Reels, Fishing—	See Balance, Bash.
Bulk and 1-lb. papers,	Nisgara, No. 25 1% in 194 · 2	Hendryx: M 6, Q 6, A 6, B 6, M 94, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo,	Sash Locks—See Locks, Sash
14-16. papers 1b. 94@116	in. 2014 ¢ No. 26 Trov. 134 in., 1414 ¢; 2 in., 1614 ¢ Star, No. 26.1% in., 19 ¢; 2 in., 2014 ¢ Tackle Blocks—See Blocks.	Populo, Nickeled Populo20% Aluminum German filv. Bronze 25%	See Weights Seeh.
Police Goods-	Pumps—	Aluminum German Silv., Bronze 25% 1240 N, 124 N. 20% 3004 N, 05 N, 6 RM G 9 25%	Sausage Stuffers or Fillers

Sausage Stuffers or Fillers See Stuffers or Fillers, Sausage.

Saw Frames— See Frames, Saw.

Hendryx:

M. 6. Q. 6. A. 6. B. 6. M. 9¼, M. 16.
Q. 16. A. 16. B. 16. 4008. Rubber.
Populo. Nickeled Populo. 20.7
Aluminum German £tlv. Bronze 25.7
1240 N. 124 N. 20.7
2011 N. 06 N. 6 R.M. G. 9. 25.5
4 N. 6 P.N. 21 N. 20.7
2014 P. 334.4.7. 2001 P.N. 334.5. 00294 P.N. 334.4.7. 2001 P.N. 334.5. 00294 P.N. 334.5. 2001 P.N. 3019 N. 971 P.N. 202 P.N. 2001 P.N. 2

Saw Sets-See Sets, Baw. Saw Tools-See Tools, Baw.

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August 29, 1907	THE IRC	ON AGE	OII
Saws-	Set and Cap-	Pruning Shears-	Slaw Cutters-See Cutters.
Atkins':	Set (Iron)	Cronk's Hand Shears	Snaps, Harness-
Circular	Set (Steel), net advance over	Disston's Combined Pruning Hook and Saw. # doz. \$18.00	German
Cross Cuts35%	Sq. Hd. Cap	Disston's Pruning Hook only, # doz., \$12.00	Covert Mfg. Co.; Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%;
Narrow Cross Cut	Rd. Hd. Cap50&7\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	John T. Henry Mfg. Co.: Pruning Shears, all grades40% P. S. & W. Co	High Grade, 40%; Trojan40% Jockey25%
One-Man Cross Cut	Wood-	Columbian Cuttery Co.:	
Wood Saws	List July 23 1903.	Hedge, Wilcut Brand60&10% Lawn and Border, Wilcut Brand.	Snaths— Scythe50%
Chapin-Stephens Co: Turning Saws and Frames30@30&10% Diamond Saw & Stamping Works: Ottoble Saws Samping Works:	Flat Head, Iron871/265@%	60&10%	
Distanta	Flat Head, Iron87½&5@% Round Head, Iron85&5@% Flat Head, Brass80&5@%	Sheaves- Sliding Door-	Sn.ps, Tinners—See Shears.
Circular, Solid and Ins'ted Tooth 50% Band, 2 to 18 in. wide	Flat Hoad Propre 75456 9	Reading	Spoons and Forks-
Crosscuts	Round Head, Bronze. 721/45a % Drive Screws 871/45a %	Sliding Shutter-	Silver Plated- Good Quality50&10@60&5%
Crosscuts 45% Narrow Crosscuts. 50% Mulay, Mill and Drag. 60% Framed Woodsaws. 25% Woodsaw Blades 25%	Scroll Saws -	Reading list	Cheap
Wdeem Bode Tinned 15%	See Saics, Scroll.	Shells-Shells, Empty-	International Silver Co.: 1847 Rogers Bros., 40&10%; Rogers
Woodsaw Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8. 25% Hand Saws. Nos. 7, 107, 107½, 8, 1, 0, 00, Combination	Scythes— Per doz.		6c Hamilton. William Rogers & Bro., William Rogers Eagle Brand. 504:10 Anchor, Rogers Brand. 60 Wm. Hogers & Son. 604:10 Km. Hogers & Son. 604:10 Km.
Hand Saws. Nos. 7, 107, 107 107 12, 3, 1, 0, 00, Combination	Grass, No. 1, Plain \$6.25@6.75	Brass Shells, Empty: Climax, 10 and 12 gauge65&10% Club, Rival, 65&5%; First Quality.	Anchor, Rogers Brand
Compass, Key Hole, &c	Clipper, Bronzed Webb. \$6.50@7.00 No. 3 Clipper, Pol'd Webb.	Paper Shells, Empty;	Miscellaneous
C. E. Jennings & Co. 8;	No. 6 Clipper and Solid Stee.,	New Rapid, 10, 12, 16 and 20 gauge. 25&10%	German Silver60@60&5%
Back Saws	\$7.00@7.50	Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade,	Tinned Iron— Teasper gro.50@55¢
Framed Wood Saws2300172/6	Bush, Weed and Bramble, No. 2.	23000 %	Tables per gro. \$0.90@\$1.00
Hand Saws	Grain, No. 1\$8.25@8.75 Bronzed Webb, No. 1\$8.50@9.00	Union, League, 12 and 12 gauge; Rival Grade	Springs- Door-
Millers Fails: Butcher Saws	Nos. 3 and 4 Clipper, Grain \$8.75@9.25	New Climax, Deliance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16	Bardsley's Spring and Check40% Chicago (Coil)40%
Butcher Saws. 1562.10% Star Saw Blades. 1.1562.10% Massachusetts Saw Works: Victor Kitchen Saws. 4062.10850% Butcher Saws Blades 356.40% Peace & Richardson's Hand Saws 30%	Solid Steel, No. 6 \$9.25@9.75	16 and 20 gauge; Climax, 14, 16 and 20 gauge 20&5% Challenge, Monarch, 10, 12, 16 and 20 gauge: League, Union, 14, 16	Gem (Coil)
Butcher Saws Blades35@40%	Seeders, Raisin-	and 20 gauge; Repeater Grade. 20% Expert, 10, 12, 16 and 20 gauge,	Reliance (Coil)
	Enterprise25@30%	Expert, 10, 12, 16 and 20 gauge, 33%&5%	
Circular Saws	Sets— Awl and Tool—	Shells, Loaded-	Carriage, Wagon, &c.— 11/4 in. and Wider: Per 100 lb.
Gang Mill. Mulay and Drag Saws. 45%	Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$750% Millers Falls Adj. Tool Handles, No.	Loaded with Black Powder 40% Loaded with Smokeless Powder,	Black
Band Saws	1, \$12; No. 4, \$12; No. 5, \$1820&10%	medium grade	Bright\$5.25@\$5.50
Hand Saws	Garden Tool Sets-	high grade	Painted Seat Springs: 11/2 x 2 x 26per pr. 47@49¢
Compass, Key Hole, &c. 25@25&74% Wood Saws	Ft. Madison Three Plows, Hoe, Rake and Shovel	Union Metallic Cartridge Co.: New Club, Black Powders40% Nitro Club, Smokeless Powders.40&5%	1½ x 3 x 28per pr.69@71¢
Compass, Key Hole, &c. 25@25&174/ Wood Saws. 40&77/2/ Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws. 50%	Sets, Nall-	Arrow, Smokeless Powders. 40&10&10 Winchester:	Sprinklers, Lawn— American Foundry & Mfg. Co.:
Hack Saw Blades and	Octagon	Smokeless Repeater Grade40&5% Smokeless Leader Grade40&10&10%	Cactus, 65%; Japanese, 70%; Na-
Frames- Atkins' Hack Saw Blades A A A25%	Cannon's Diamond Point, # gro. \$12,	Black Powder40%	Enterprise
Thieston's:	Mayhew's	Shingles, Metal-Per Sq.	2, \$15; No. 3, \$2030%
Concave Blades	Mayhew's \$9 gro. \$9.90 Snell's Corrugated, Cup Pt40&10% Snell's Knurled, Cup Pt40&10% Victor Knurled Cup Pt \$9 gro. \$7.50	Edwards Mfg. Co.: Painted. Galv.	Squares-
Simonds wile Co	Rivet-	14 x 20\$1.25 \$6.00 10 x 14	Nickel plated. \ List Jan. 5, 1900. Steel and Iron. \ 75&19% Rosewood Hdl. Try Square and
Hack Saws, Nos. 175, 180, complete,	Regular list	Wheeling Corrugating Co.:	Rosewood Hdl. Try Square and T-Bevels60&10&10@70%
Gardell's Hook Saw Blades 40&109	Atkin's:	Dixie, 14 x 20 in \$4.25 \$5.50 Dixie, 10 x 14 in 4.50 6.00 Dixie, 7 x 10 in 5.00 6.75	T-Bevels
Griffin's Hack Saw Frames35&5&10.9 Griffin's Hack Saw Blades35&5&10.9 Star Hack Saw Blades	Criterion40%	Dixie, 7 x 10 in 5,00 6.75	Bevels
Star Hack Saws and Blades15&10% Sterling Hack Saw Blades30&10&5%	Adjustable	Shoes, Horse, Mule,&c	Rosewood Handle, 60&10%; Iron Stock and Bevel15%
Sterling Hack Saw Frames30&10&10% Sterling Power Hack Saw Machines,	umph	F.o.b. Pittsburgh: Ironper keg.\$4.10	Squeezers, Lemon
Sterling Fower Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00.10% Victor Hack Saw Blades	Nos. 3 and 4, Cross Cut. 320,60 No. 5, Mill. \$30,00 Nos. 10, 11, 95 \$15,60 No. 1 Old Style. \$10,00	Steelper keg.\$3.85 Burden's, all sizes keg \$3.90	Wood, Common, gro., No. 0, \$5.25@\$5.50; No. 1, \$6.25@\$6.50.
	No. 1 Old Style\$10.00 Special\$16.25	Shot-	Wood, Porcelain Lined: Cheap
Scroll-	Special \$16.25 Giant Royal Cross Cut doz. \$8.00 Royal, Hand 40.22 \$4.50	25-lb. bag.	Good Grade
Barnes, No. 7, \$15	Taintor Positive	Drop, up to B\$1.90 Drop, B and larger 2.15	Tinned Irondoz. \$0.75@1.25 Iron, Porcelain Lineddoz. \$1.75
without boring attachment, \$18; with boring attachment, \$20		Buck	Staples—
Rogers, complete, \$10.0015&10% Rogers, complete, \$3.50 and \$4.00	Fox Shaving Sets. No. 30	Dust 2.40	Barbed Blind lb. 6@61/4
196010/6	Sharpeners, Knife-	Shovels and Spades—	Electricians', Association list 80&10&10&10%
Scales— Family, Turnbull's\$0@50&10%	Pike Mfg. Co.:	Association List, Nov. 15, 1902.40% Avery Stamping Co40%	Fence Staples, Plain, \$2.25; Gal- vanized\$2.55
Counter:	Fast Cut Pocket Knife Hones,	Snow Shovels-	Poultry Netting Staples per lb. 34@344
Hatch, Platform, 1/2 oz. to 4 lbs	Mounted Kitchen Sand Stone, \$1.50	Long Handle\$3.25@\$3.50 Wood and Mall. D. Handle.	Steels, Butchers'-
	Mounted Ritchen Sand Stone, # doz \$1.50 Natural Grit Carving Knife Hones, # doz \$3.00 Quick Cut Emery Carving Knife Hones, # doz \$1.50 Quick Edge Pocket Knife Hones, # doz \$2.00	\$3.75@84.00	Dick's South Broa.'
Union Platform, Plain.\$1.70@1.90 Union Platform, Stpd.\$1.85@2.15	Knife Hones, # doz\$1.50	Sieves and Sifters-	
Chatillon's:	Hones, # doz\$2,50	Hunter's Imitation	Steelyards — 30@30&10%
Favorite	Skate-	Hunter's Genuine	Stocks and Dies—
Favorite 0% Crocers' Trin Scales 55% The Standard Portables 40% The Standard R. R. and Wag-	Smith & Hemenway Co., Eureka50%	per gro. \$12.00@12.50	Blacksmiths' 50@50d10% Curtis Rev'ble Ratchet Die Stock. 25% Derby Screw Plates
on50&10%	Shaves, Spoke—	Sieves, Seamless Metallic	Green River
Box, 1 Handle doz. \$2.00@2.25	Iron	Mesh	Green River 25% Lightning Screw Plate 25% Little Glar 25% Reece's New Screw Plates 25%
Box, 2 Handledoz. \$3.50@2.60 ShipLight \$2.00: Heavy \$3.50	Wood	Tinned Wire . \$1.15 1.15 1.20 1.30	
Chapin-Stephens Co., Box30230&10% Richards Mfg, Co., Foot60%	Chapin-Stephens Co30@30&10% Goudell's doz. \$9.0015&10%	Sieves, Wooden Rim-	Stoners, Cherry— Enterprise25@30%
Screws-Bench and Hand	Shears—	Nested, 10, 11 and 12 Inch. Mesh 18, Nesteddoz. \$0.90@0.95	Stones-Oil, &c.
Bench, Iron, doz., 1 in., \$2.50@ 2.75; 11/8, \$3.00@3.25; 11/4.\$3.50@3.75	Cast Iron 7 8 9 in. Best \$16.00 18.00 20.00 gro.	Mesh 18, Nesteddoz. \$0.90@0.95 Mesh 20, Nesteddoz. \$1.00@1.05 Mesh 24, Nesteddoz. \$1.30@1.40	Pike Mfg. Co., 1907 list: 49 fb 1
Bench, Wood 20@20&10% Hand, Wood 70&10@70&10&10%	Good\$13.00 15.00 17.00 gro. Cheap \$5.00 6.00 7.00 gro.	Sinks. Cast Iron-	Arkansas St. No. 1, 3 to 51/2 in. \$2.80 Arkansas St. No. 1, 51/2 to 8 in. \$3.50
Chapin-Stephens Co., Hand	Straight Trimmers, &c.:	Painted, Standard list:	Pike Mfg, Co., 1907 list; 39 h Arkansas St. No. 1, 3 to 5½ ig., 2, 30 Arkansas St. No. 1, 5½ to 8 in 53.50 Arkansas Slips No. 1
70@70&10&21/2% Coach, Lag and Hand Rail	Best quality Jap 70@70&10% Best quality, Nickel 60@60&10%	12 x 12 to 22 x 36 in 60% 20 x 40 to 24 x 50 in 50%	Washita St. Extra, 4 to 8 in.50¢
Lag. Cone Point, list Oct. 1,	Tallors' Shears 1060 104 107	Zi x 60 to Zi x 120 in30% Barnes' low list:	Washita St., No. 2, 4 to 8 in 25¢
Coach, Gimlet Point, list	Acme Cast Sheara	Up to and including 20 x 36 in50% 20 x 40 to 24 x 50 in45%	Rosy Red Slips
Coach, Gimlet Point, list Oct. 1, '99	Sheep, '900 list	NOTE.—There is not entire uniformity in lists used by jobbers.	Washita Slips, No. 1
Jack Screws-	Tinners' Snips-	Skeins, Wagon—	India O.3 Stones (entire list)33%% Quickcut Emery and Corundum Oil
Standard List 70410@75%	Steel Blades \$0.45@20.4109	Cast Iron70@75&10% Steel	Quickcut Emery and Corundum Axe
Millers Falls	Steel Laid Blades 404 10@50%		Quickcut Emery Rubbing Bricks. 40%
Machine-	504/	Slates, School— Factory Shipments.	Hindostan No. 1, R'g'lar. 3 h 8e
Flat or Round Head, Iron,	Heinisch's Snips	"D" Slates	Turkey Oil Stones, Extra. 5 to
Printer Head, Iron, Brass or	Ningara Snire. 40% P. S. & W. Forged Handles, 25%; W. R. W. 40&10%	60&5 tens	Queer Creek Stones, 4 to 8 in.20¢
Bronze	W. R. W	Victor A, Noiseless . 6044 tens 45%	Arkansas Slips No. 1

Vises-

Solid Box 50@50&10% Parallel-

612	THE IRO
Scythe Stones-	Thermometers-
Pike Mfg. Co., 1901 list:	Tin Case80&10@80&10&5%
Lamoille S. S gr gro. \$12.00	
Green Mountain S. S. W gro. \$6.00	Ties, Bale—Steel Wire—
No. 1 Indian Pond S.S. 7 gro. 17.00 No. 2 Indian Pond S.S. 7 gro. 14.50	Monitor, Cross Head, &c. 70&21/2%
Pike Mfg. Co., 1901 list: Black Diamond S. S., # gro. \$12.00 Lamoille S. S., # gro. \$11.00 White Mountain S. S. # gro. \$1.00 Green Mountain S. S. # gro. \$5.00 Extra Indian Pond S. S. # gro. \$7.50 No. 1 Indian Pond S. S. # gro. \$7.50 No. 2 Indian Pond S. S. # gro. \$7.50 Leader Red End S. S. # gro. \$1.50 Quick Cut Emery. # gro. \$10.00 Pure Corundum, # gro. \$18.00 Crescent \$7.00	Tinners' Shears, &c.— See Shears, Tinners', &c.
Crescent St. 100 Emery Scythe Rifles, 2 Coat. 30 Emery Scythe Rifles, 2 Coat. 30 Emery Scythe Rifles, 4 Coat. 310 Emery Scythe Rifles, 4 Coat. 312 Balance of 1904 list 33%. Electro (Artificial), 2 gro 335%	Tinware-
Balance of 1904 list 33%% Electro (Artificial), \$\mathbb{g}\$ gro\$12.00	Stamped, Japanned and Pieced, sold very generally at net prices.
\$12.00	Tire Benders, Upsetters, &c. See Benders and Upsetters, Tire.
Stoppers, Bottle— Victor Bottle Stoppers # gro. \$9.00	Tools—Coopers'—
Stops— Bench-	L. & I. J. White20@20&5%
Millers Falls	Haying-
Morrill's, No. 2, \$12.50	Myers' Hay Toois45%
Chapin-Stephens Co50@50&10% Plane—	Smith & Hemenway Co.'s, David- son, & doz., Nickel Plated, \$1.50;
Chapin-Stephens Co20%	Gold Plated
Straps— Box—	Saw- Atkina' Cross Cut Saw Tools35&5%
Cary's Universal, case lots20&10&10% Stretchers, Carpet—	Atkins' Cross Cut Saw Tools35&5% Simonds' Improved35% Simonds' Crescent
Cast Iron, Steel Points, dos. 60@60&10%	Ship—
Socket	Transom Lifters—
Excelsior Stretcher and Tack Ham- ner Combined, & doz. \$6.0020%	See Lifters, Transom.
Stuffers, Sausage— Enterprise Mfg. Co25@25&714%	Traps-Fly-
Enterprise Mfg. Co25@25&7\% National Specialty Co., list Jan. 1, 1902	Balloon, Globe or Acme, doz. \$1.15@\$1.z5; gro\$11.50@12.00
P., S. & W. Co40&10&5% - Sweepers, Carpet—	Harper, Champion or Paragon, doz. \$1.25(a.1.40; gro. \$13.00(a.13.50
Discoll Cornet Sweener Co . 39 dez	Game-
Superba, Crotch Mahogany\$36.00 Triumph Fancy Veneers\$33.00 Parlor Oneen Fig. Rosewood. \$30.00	Imitation Oneida70&10%
Parlor Queen, Fig. Rosewood. \$30.00 Elite, Hugarian Ash. An, Queen, Fig. Mahogany. \$27.00 Ideal, Bird's-Eye Maple \$25.00 Grand Rapids, Nickel, \$25.00	Newhouse
Grand Rapids, Nickel, \$24.00;	Mouse and Rat
Japan Kapids, Mickel, \$22.00; Japan \$22.00 Standard, Nickel, \$22.00; Japan \$20.00 Crown Jewel, Nickel, \$21.00; Jap.\$19.00 Crystal, Glass Top \$36.00	Mouse, Wood, Choker, doz. holes
Crystal, Glass Top. \$36.00 Grand, 17 in, wide. \$36.01 Club, 24 in, wide. \$54.00 Hall, 28 in, wide. \$60.00	Mouse, Round or Square Wirc.
	Marty French Rat and Mouse Traps (Genuine): No. 1. Rat. 30 doz., \$13.25; case of
NOTE.—Rebates: 50c per dozen on three dozen lots; \$1 per dozen on five- dozen lots; \$2 per dozen on ten-dozen	(Genuine): No. 1, Rat, \$\psi\$ doz., \$13.25; case of 24 No. 3, Bat, \$\psi\$ doz., \$6.50; case of 50 No. 3\psi\$, Bat, \$\psi\$ doz. \$\$5.25; case of 72 \$1.70 doz.
lots; \$2.50 per dozen on twenty-five dozen lots.	No. 31/2, Rat, W doz. \$5.25; case of 72 \$4.70 doz.
Tacks, Finishing Nails,	No. 4, Mouse, @ doz. \$3.85; case of 150 \$3.00 doz.
&c.	No. 5, Mouse, # doz. \$3.00; case of 150 \$2.25 doz.
American Carpet Tacks. 90425% American Cut Tacks. 90425% Swedes' Cut Tacks. 90435% Swedes' Upholsterers'. 90435% Gimp Tacks. 90435% Lace Tacks. 90435% Trimmers' Tacks. 90425% Looking Glass Tacks. 65%	Disston Brick and Pointing25%
Swedes Upholsterers'90635%	Disston "Standard Brand" and Gar-
Lace Tacks	Kohler's Steel Garden Trowels, # gro., 5 in., \$4.80; 6 in., \$6.00.
Looking Glass Tacks	Disston Brick and Pointing
90&40%	Trucks, Warehouse, &c.
Finishing Nails	B. & L. Block Co.:
NOTE.—The above prices are for Stand ard Weights.	Western Pattern
Miscellaneous-	B & L Block Co.:
Double Pointed Tacks 90&4 or 5 tens	Market State Market State Stat
See also Nails, Wire.	Tubs, Wash— M'f'ar's list, price per gross.
Tanks, Oil and Gasoline—	M'f'gr's list, price per gross. No. 0 1 2 3 Galvanized. \$67 \$79 \$89 \$99 10%
Wilson & Friend Co.: Gal. Gasoline Oil 30 \$2.75 \$3.00 60 \$2.50 \$4.00	Twine, Miscellaneous-
- 60 \$2.50 \$4.00 1.00 \$5.00 \$6.75	Flax Twine: No. 9, 14 and 16-lb, Balls 23/3256
Tapes, Measuring-	No. 12, 1/4 and 1/2-lb. Balls.21@22c No. 18, 1/4 and 1/2-lb. Balls.18@20¢
American Asses' Skin 50@-% Patent Leather 25@5065%	No. 9, ¼ and ½-lb, Balls,23@25¢ No. 12, ¼ and ½-lb, Balls,21@22c No. 18, ¼ and ½-lb, Balls,18@20¢ No. 24, ¼ and ½-lb, Balls,17@19¢ No. 36, ¼ and ½-lb, Balls,17@19¢ Chalk Line, Cotton :
Chesterman's 95@95459	Balls
Keuffel S. Esser Co.: Falorite, Ass Skin	Balls
Favorite, Duck and Leather	to doz
35&5%; Pocket, 35@35&5%.	1/2-lb. Balls
Lufkin's: Asses' Skin	American 5-Ply Hemp. 1-1h. Balls
Asses Skin 40&10650 Asses Skin 40&10650 Asses Skin 40&10650 Asses Asses	Balls
Wiehusch & Hilger:	India 3-Ply Hemp, 1-16, Ralls 101/2@111/2¢
Chesterman's Metallic, No. 34L, etc. 25% Chesterman's Steel, No. 1038L.	India 3-Ply Hemp, 11/2-lb. Ball. 10@11e
etc	2, 3. 4 and 5-Ply Jute. 16.Th. Balls

Ties, Bale-Steel Wire-	Parallel-
Single Loop80&10&5% Monitor, Cross Head, &c. 70&2\\(\frac{1}{2}\)%	Athol Machine Co.: - Simpson's Adjustable40%
Tinners' Shears, &c	Athol Machine Co.: Simpson's Adjustable
See Shears, Tinners', &c.	each, Nos. 2, \$10.50; 3, \$16.00; 4, \$20.50; 5, \$27.00.
Tinware— Stamped, Japanned and Pieced, sold	Fulton Mach. & Vise Co.: Reed, Swivel
very generally at net prices. Tire Benders, Upsetters, &c.	Hollands': Machinists'
See Benders and Upsetters, Tire.	Star, Solid Jaw. 40% Itoliands: Machinists' 40@40&5% Keystone 55&4@70% Lewis Tool Co.: Adjustable Jaw. 30% Monarch, 50%; Solid Jaw. 50% Massey Vise Co.: Clincher 40% Perfect, 15%; Lightning Grip. 15% Herrill 5 20%
Tools—Coopers'-	Massey Vise Co.: Clincher
. & I. J. White20@20&5%	Merrill's
Haying— Myers' Hay Tools45%	Victor, 20@25%; Regulars20@25% Vulcau's
Miniature— Smith & Hemenway Co,'s, David-	Partier's Partier's Partier's 20@25%; Regulars 20@25%; Vulcau's 40@45% Combination Pipe 55@60% Prentisa 20@75% Rock Island 25% 55@60% Prentisa 25% 55@60% Stephens' 335% Stephens' 335% 335% Stephens' 335%
Smith & Hemenway Co.'s, David- son, & doz., Nickel Plated. \$1.50; Gold Plated\$2.00	Stephens'
Saw- Atkins' Cross Cut Saw Tools35&5%	Saw Filers-
Atkins' Cross Cut Saw Tools35&5% Simonds' Improved35% Simonds' Crescent35%	Disston's D 3 Clamp and Guide, \$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Ship—	Wood Workers-
Transom Lifters—	Fulton Mach, & Vise Co.: 25%
See Lifters, Transom.	Star 40% Massey vise Co.; Lightning Grip, 15%; Perfect15% Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.
Traps—Fly- Balloon, Globe or Acme, doz.	in., \$6.00; 9 in., \$7.00; 14 in., \$8.00. Miscellaneous—
Balloon, Globe or Acme, doz. \$1.15@\$1.25; gro\$1.1.50@12.00 ## Balloon or Parayon, doz. \$1.25@1.40; gro. \$13.00@13.50	
Game-	Holland's Combination Pipe60@60&5% Massey's Quick Action Pipe40% Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870 40%.
Imitation Oneida70&10	Rock Island Pipe25%
Victor	Wads-Price per M. B. E., 11 up
Mouse and Rat House, Wood, Choker, doz. holes	B. E., 9 and 1070 \$
Mouse, Round or Square Wire.	B. E., 7
Marty French Rat and Mouse Traps (Genuine):	B. E., 7. 80¢ P. E., 11 up . \$1.00 P. E., 9 and 10 . 1.25 P. E., 8 . 1.50 P. E., 7 and 10 . 1.25 Ely's B. E., 11 and larger \$1.70@1.78 Ely's P. E., 12 to 20 . \$5.00@3.25
No. 1, Rat, 10 doz., \$13.25; case of 24	Ely's B. E., 11 and larger.\$1.70@1.75 Ely's P. E., 12 to 20\$3.00@3.25
(Genuine: † doz., \$13.25; case of 24	Ware, Hollow-
No. 4, Mouse, # doz. \$3.85; case of 150 \$3.00 doz. No. 5, Mouse, # doz. \$3.00; case of 150 \$2.25 doz.	Stove Hollow Ware:
Trowels—	Enameled
Disston Brick and Pointing	White Enameled Ware: Maslin Kettles65&10% Covered Wares:
of gro. \$6.00	Tinned and Turned35&10% Enameled45&10% See also Pots, Glue.
Woodrough & McParlin, Plastering.25%	Enameled-
B. & L. Block Co.:	Agate Nickel Steel Ware331/8/ Iron Clad Ware
B. & L. Block Co.: New York Pattern	Tea Kettles-
McKinney Truckseach, net \$10.00 Model Stove Trucks doz. \$18.50	Galvanized Tea Kettles: Inch 6
Tubs, Wash-	Steel Hollow Ware-
M'f'gr's list, price per gross. No. 0 1 2 3 Halvanized. \$67 \$79 \$89 \$99 10%	Avery Spiders and Griddles65@65&5 % Avery Kettles
Twine, Miscellaneous—	Never Break Spiders and Griddles
Plan Tening :	Never Break Kettles 60 60 Solid Steel Spiders and Griddles 65 & Solid Steel Kettles 60 60 60 60 60 60 60 60 60 60 60 60 60
No. 9, ¼ and ½-lb. Balls.23@25¢ No. 12, ¼ and ½-lb. Balls.21@22¢ No. 18, ¼ and ½-lb. Balls.18@22¢ No. 25, ¼ and ½-lb. Balls.17a19¢ No. 36, ¼ and ½-lb. Balls.17a19¢ halk Line, Cutton in-th. Balls 28@31¢	Warmers, Foot-
No. 36, ¼ and ½-lb. Balls.18@18¢.	Pike Mig. Co., Soapstone40@40&10% Washboards—
Balls	Solid Zinc: # doz Crescent, family size, bent frame, 4.0: Red Star, family size, stationary
to doz	Red Star, family size, stationary protector
Imerican 2-Ply Hemp, 1, and 1/2-lb. Balls	protector \$4.00 Double Zinc Surface: Saginaw Globe, family size, stationary protector
42-lb. Balls	Cable Cross, family size, station- ary protector
Balls	Single Saginaw Globe 89 85
ndia 3-Ply Hemp, 14-lb. Ball.	Brass Surface: Brass King, Single Surface, open
	Brass Surface: Brass King, Single Surface, open back Nickel Plate Surface: No. 1001 Nickel Plate, Single Sur-
D. S. 4 and 5-Ply Jute. 16-15. Balls	Glass Surface: Glass King, Single Surface, open
Balls, according to quality, 30@60¢	back \$3,95 Enamel Surface: Enamel King, Single Surface, venti- lated back \$3.95
Wool, 3 to 6 ply B 9¢; A 10¢	

Washers—Leather, Axle— 80tid
Coil: 7/8 1 11/4 11/4 Inch. 10/2/2 11/2/2 12/2/2 16/2 per box 1 ron or Steel— Size boit 5-16 3/4 1/4 3/4 Washers \$5.90 5.00 3.70 3.50 3.50
The above prices are based on \$5.50 off list. In lots less than one keg add
% per lb.; 5-lb. boxes add % to list. Cast Washers— Over 1/2 inch, barrel lots
per lb. 1% @2 v Wedges— Oil Finish
Weights—Hitching— Covert Mfg. Co30&2%
Sash— Per ton, f.o.b. factory: Eastern District\$30.00 Southern Territory.\$24,00@25.00
Western and Central Districts\$25.00@28.50 Wheels, Well—
8-in., \$1.55; 10-in., \$2.00; 12-in.,
\$2.50; 14·in., \$4.00. Wire and Wire Goods—
Bright and Annealed:
Bright and Annealed: 6 to 9
6 to 9
27 to 36
6 to 9
6 to 18
Annealed and Tinned, 65&10@70&5% Brass and Copper45@59&10%
Brass and Copper
Bright Wire Goods90&15% Brass Wire Goods90% Brass Cup and Shoulder Hooks, 80&15%
Wire Cloth and Netting— Galvanized Wire Netting. 8045% Painted Serven Cloth, 100 ft., \$1.35 Standard Galv. Hardware Grade:
Standard Galv, Hardware Grade: Per 100 sq. ft. Nos. 2, 2½ & 3 Mesh. 33.40 Nos. 4 and 5 Mesh. 33.55 No. 6 Mesh. 33.90 No. 8 Mesh. \$1.40
No. 6 Mcsh
Wrenches-
Agricultural
Drop Forged S
Bemis & Call's: Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combi- nation Bright, 40%.
Steel Handle Nut
Baxter Pattern & Wrenches 70.45@70.410% Drop Forged &
Loes Mechanics 40&10&10&5005%
Donohue's Engineer
1.288 than case 1078
Other Wrenches
Wrought Goods— Staples, Hooks, &c., Ust March 17, '92
Zinc- Sheetper 100 lb., \$8.00@\$8.25
2.00 (Q 88.25

Steel Harrow Teeth, plain or headed, %-inch and larger...

per 100 lbs. \$2.75@\$3.00

Balls, according to qua

Wool, 3 to 6 ply...B 9¢;

Teeth, Harrow-

